

The Syntax and Semantics of Focus Particles

by

Youngjoo Lee

M.A. Linguistics
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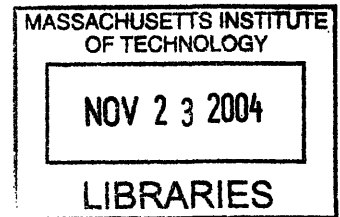
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Signature of Author: _____

Department of Linguistics and Philosophy
July 9, 2004

Certified by: _____

Danny Fox, Associate Professor of Linguistics
Thesis Supervisor

Certified by: _____

Irene Heim, Professor of Linguistics
Thesis Supervisor

Accepted by: _____

Alec Marantz, Professor of Linguistics
Head, Department of Linguistics and Philosophy

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Abstract

This dissertation investigates the syntax and semantics of two focus particles in Korean with special reference to their scopal behavior. The two particles under consideration are the exclusive particle *man* and the additive particle *to*. The main empirical concern of this work is to show that despite apparent syntactic similarities between focused phrases (i.e. phrases containing focus particles) and standard QPs, the former exhibits more diverse scopal behavior than the latter. The claims that are made in the course of the discussion of the scope patterns constitute the theoretical contribution of this work.

The scope of the particle *man* 'only' varies with the morphological marking of the *man*-phrase, which is puzzling under the assumption that the particle is a scope-bearing element. I argue that despite appearances, the particle is not a scope-bearing element, but an agreement morpheme, and that the quantificational meaning comes from a null head ONLY. I also claim that the position of the ONLY head can be deduced from the order of nominal affixes, thanks to the strong correlation between morphology and syntax. This new correlation between nominal affixes and the scope of focus particles supports Baker's Mirror Principle in a new area outside the verbal domain.

The scopal behavior of *to*-phrases is also distinct from that of QPs. Three factors are identified that affect the scope of *to*-phrases: scrambling, the kind of function in the preceding context, and the nature of the focused phrase. I claim that (i) the anaphoric view of additive particles is superior to the existential view, (ii) both syntactic and semantic mechanisms are available for variable binding, thus the presence of a bound variable in a dislocated position does not imply syntactic reconstruction, and (iii) covert operations such as reconstruction and type raising are constrained by an economy principle so that they are disallowed when not motivated.

Thesis Supervisors: Irene Heim, Professor of Linguistics
Danny Fox, Associate Professor of Linguistics

To my parents,
with love and gratitude.

부모님께
사랑과 감사함으로 드립니다.

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Chapter 1

Introduction

1.1 Goal of the Dissertation

This dissertation investigates the scopal behavior of two focus particles in Korean. The particles under consideration are the exclusive particle *man* ‘only’ and the additive particle *to* ‘also/too’, as exemplified in (1) below.

- (1) a. Mary-ka John-**man**-(ul) manassta.
 Mary-Nom John-only-(Acc) met
 ‘Mary only met John_F.’¹
- b. Mary-ka John-to manassta.
 Mary-Nom John-also met
 ‘Mary met John_F, too’

One striking characteristic of the Korean focus particles is that they have the status of an affix. Thus, focus particles in (1) form a constituent with the focused DP that occurs adjacent to the particle. The affixal status is clearly manifested in (1a), where the exclusive particle precedes the case marker. Note that this pattern contrasts with that of the corresponding English items such as *only*, *also*, and *too*, as seen in the translation. These items appear in a position away from the focused phrase, and associate with the focused phrase, although *only* can form a constituent with the following DP (e.g. *Mary met only John*).

This characteristic of focus particles in Korean creates new questions to explore when combined with another distinct property of Korean, namely scrambling. After the particle forms a constituent with a focused phrase, the whole phrase (*John-man-ul* in (1a)

¹ F-marking indicates focus, that is, phonetic prominence.

and *John-to* in (1b)) can undergo scrambling just like other constituents. Therefore, we can examine how the focused phrases (phrases that contain the focus particle) behave scopally in scrambling contexts, especially how they interact with other quantificational elements such as quantifier phrases (QPs). This question arises due to the implicit assumption that phrases like *only John* and their counterparts in other languages have the same semantic type as quantifier phrases. Specifically, both focused phrases and QPs are assumed to be of type $\langle et, t \rangle$, a set of sets of individuals; and this criterion categorizes both of them as generalized quantifiers. The null hypothesis under this assumption is that focused phrases and QPs would exhibit the same scopal behavior. In particular, it is expected that the scopal interaction of a focused phrase and a QP will follow the same pattern as the scopal interaction of two QPs. Since the study of the scopal interaction of QPs is quite established, we can use it as a reference point in investigating the scopal interaction of a focused phrase and a QP. The main empirical concern of this dissertation is to examine this implicit assumption and expectation, which will lead to discussions of the syntax and semantics of the focus particles that goes beyond their scopal behavior. To state briefly, the findings of this work suggest that we cannot assume by default that focused phrases would behave in the same way as QPs do. Despite apparent similarities in their semantic types, focused phrases exhibit more diverse scopal behavior than QPs. Evidence such as this motivates a previously unrecognized distinction between focused phrases and QPs.

1.2 Overview

This dissertation consists of two main chapters, which are devoted to two focus particles in Korean (the exclusive particle *man* and the additive particle *to*). Chapter 2 examines the scopal behavior of the exclusive particle *man*. This chapter starts with some novel data showing that the scopal behavior of a phrase with the particle *man* does not conform to the behavior of QPs. This disproves the null hypothesis stated above. The main proposal of this chapter is that despite appearances, the particle *man* is not a scope-bearing element, but an agreement morpheme signaling the presence of an abstract head

ONLY. This abstract head is the real source of the quantificational force, namely exhaustivity. Since the abstract head is phonetically null, we need to identify the position of the abstract head by looking at some other aspect of the sentence, which I argue is the order of nominal affixes. This correlation between the nominal affixes and clausal structure supports Baker's (1985) Mirror Principle in a new area outside the verbal domain. I show that the proposed analysis explains the hitherto unnoticed scope facts without making special stipulations, unlike other alternative analyses.

Chapter 3 is devoted to the additive particle *to*. As in the case of the exclusive particle, the scopal behavior of the focused phrase with the particle *to* does not fulfill the expectation that it will behave like other QPs. Furthermore, the scopal behavior of the additive particle is distinct from that of the exclusive particle presented in chapter 2. In order to derive the scope facts, I adopt three elements, each of which is independently motivated. First, I argue that the anaphoric approach to the additive particle (Kripke 1990, Heim 1992) is superior to the existential approach (Karttunen & Peters 1979). I propose a specific implementation of the anaphoric approach, which says that the particle *to* takes three arguments and that the first one among the three is a covert pronoun. Secondly, I claim that both syntactic and semantic mechanisms are available for variable binding, thus the presence of a bound variable in a dislocated position does not always indicate that syntactic reconstruction has occurred. The third and final claim is that covert operations such as scope reconstruction and type raising are constrained by an economy principle, which allows these operations only when they are licensed by a licit motivation. Specifically, I argue that reconstruction is allowed only when it has effects on truth-conditions (Fox 2000), and type-raising is motivated by the lexical entry of the additive particle, which requires what I call *Type Parallelism*. I also consider a few alternative accounts, and show that they run into problems, unlike the proposed account which successfully derives the seemingly confusing scope pattern.

1.3 Assumptions

Before moving on to the main chapters, this section provides a brief introduction to basic rules of semantic composition that will be used later. The semantic composition in this dissertation follows the fundamental assumption that the meaning of a complex expression is a function of its parts and the way they are combined in the syntax (The Principle of Compositionality). Specifically, this work follows the implementation of this principle as presented in Heim & Kratzer (1998). The rules of composition given in (2) – (7) are from Heim & Kratzer (1998), where the double bracket $\llbracket \cdot \rrbracket$ represents the interpretation function and $\llbracket \alpha \rrbracket^a$ stands for the semantic value of α under the assignment function a .

(2) Terminal Nodes

If α is a terminal node occupied by a lexical item, then $\llbracket \alpha \rrbracket$ is specified in the lexicon.

(3) Non-Branching Nodes (NN)

If α is a non-branching node and β is its daughter, then, for any assignment function a , $\llbracket \alpha \rrbracket^a = \llbracket \beta \rrbracket^a$.

(4) Functional Application (FA)

If α is a branching node and $\{\beta, \gamma\}$ is the set of its daughters, then, for any assignment function a , if $\llbracket \beta \rrbracket^a$ is a function whose domain contains $\llbracket \gamma \rrbracket^a$, then $\llbracket \alpha \rrbracket^a = \llbracket \beta \rrbracket^a (\llbracket \gamma \rrbracket^a)$

(5) Predicate Modification (PA)

If α is a branching node and $\{\beta, \gamma\}$ is the set of its daughters, then, for any assignment a , if $\llbracket \beta \rrbracket^a$ and $\llbracket \gamma \rrbracket^a$ are both functions of type $\langle e, t \rangle$, then $\llbracket \alpha \rrbracket^a = \lambda x \in D. \llbracket \beta \rrbracket^a(x) = \llbracket \gamma \rrbracket^a(x) = 1$.

(6) Predicate Abstraction (PA)²

If α is a branching node and $\{\beta, \gamma\}$ is the set of its daughters and β is a numerical index, then for any assignment a , $\llbracket \alpha \rrbracket^a = \lambda x \in D. \llbracket \gamma \rrbracket^{a[x/\beta]}$, where $\llbracket \gamma \rrbracket^{a[x/\beta]}$ represents the semantic value of γ under the modified assignment $a[x/\beta]$ which is just like the original assignment a , except for the assignment of x as the value of $a(\beta)$.

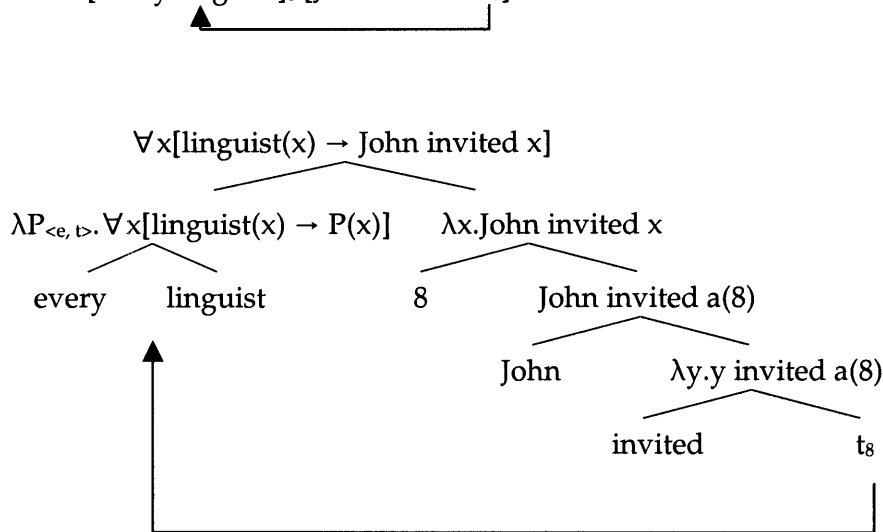
(7) Traces and Pronouns Rule

If α is a trace or pronoun with index β , then $\llbracket \alpha \rrbracket^a = a(\beta)$.

Let me illustrate how the semantic value of a sentence is read off its syntactic tree, given these rules. An example sentence is given in (8a), and its LF structure in (8b).

(8) a. John invited every linguist.

b. $[\text{every linguist}]_8 [\text{John invited } t_8]$



The quantifier in the object position moves at LF due to type mismatch, and leaves behind a trace of type e , which is interpreted by the Traces and Pronouns Rule in (7). The index right below the moved phrase becomes the binder of the trace. The structure triggers Predicate Abstraction, which gives an expression of type $\langle e, t \rangle$. The result has

² This is also known as Functional Abstraction or Lambda Abstraction.

no difficulty in combining with the QP, as shown above. Everything else in this calculation straightforwardly follows from the lexical entries of expressions used and their functional composition.

Chapter 2

Man ‘only’, Scope, and the Mirror Principle

2.1 Introduction

This chapter investigates the scopal behavior of the Korean exclusive particle *man*, which corresponds (in many but not all ways) to English *only*. I first present puzzling facts about the particle’s scope and distribution, and then argue that, despite appearances, the particle is not a scope-bearing element. Specifically, I argue that the particle *man* is an agreement morpheme that indicates the presence of a null head ONLY, which carries the exhaustive meaning of English *only*. I also claim that there is a strong correlation between syntax and morphology, as claimed under the name of the Mirror Principle by Baker (1985); thus, the relative order among the particle, case marker, and postposition reflects the hierarchy of corresponding functional heads. Thanks to this correlation, we can identify the position of the null head ONLY based on the order of nominal affixes. It turns out that it is the position of our postulated ONLY head, not that of the particle, that determines the scope relation in the sentence. I show that the proposed analysis accounts for the peculiar scope behavior of the particle without making special stipulations, unlike the commonly held view that takes the particle to be a quantificational element.

This chapter is structured as follows. Section 2.2 provides some background regarding the distribution of the particle *man*. Section 2.3 presents the scope facts, and spells out problems raised by them; the particle *man* shows different scopal behavior depending upon the syntactic environment in which it appears. In sections 2.4 and 2.5, I put forward the main proposal and analysis, and show that the proposed analysis successfully derives the particle’s scope patterns. Section 2.6 enumerates and confirms various predictions of the null head analysis, providing further support for the current proposal. Section 2.7 discusses implications of the proposed analysis. In sections 2.8 and 2.9, I focus more on the syntactic aspects of the particle *man*. I present another case of

correlation between scope and morphology, and address various issues that emerge from the current analysis including locality and binding. Finally, section 2.10 concludes the chapter with a summary.

2.2 Background

This section provides a brief description of the distribution of the particle *man*. First, it can be attached to DPs, PPs, and CPs, but not directly to predicates. Secondly, it must precede grammatical case markers, but follow postpositions.

2.2.1 Distribution

The particle *man* attaches to DPs (1), PPs (2), and both adjunct and argument CPs (3) (Yang 1993, among many others).

- (1) a. Mary-**man** oassta.
 Mary-only came
 ‘Only Mary came.’
- b. Mary-ka thongsalon-**man** kongpwuhanta.
 Mary-Nom syntax-only study
 ‘Mary studies only syntax.’
- (2) a. Mary-nun Boston-eyse-**man** salassta.
 Mary-Top Boston-in-only lived
 ‘Mary has lived only in Boston.’
- b. Mary-ka John-ul Bill-hanthey-**man** sokayhayssta.
 Mary-Nom John-Acc Bill-to-only introduced.
 ‘Mary introduced John only to Bill.’

- (3) a. Mary-nun [kulim-ul kuliki-wihayse]-**man** santa.
 Mary-Top painting-Acc draw-to-only live
 'Mary lives only to paint.'
- b. Mary-nun [John_F-i Boston-ey on-ket]-**man** anta.
 Mary-Top John-Nom Boston-to came-that-only know
 'Mary only knows that John_F came to Boston.'
 (I.e. She does not know whether others came to Boston or not)

Notice that the particle *man* is always adjacent to a phrase which contains focus. In most cases, focus is on the whole phrase that the particle is attached to, as in (1-2) and (3a). In others, focus is on some part of the adjacent phrase, as in (3b). In (3b), the embedded subject receives focus, that is, focal stress, which plays a semantic role by constraining the domain of quantification. Thus, this sentence conveys that Mary does not know whether people other than John came to Boston. Without stress on *John*, however, it is not clear which propositions Mary does not know. The sentence simply states that the embedded clause is the only proposition that Mary knows among the contextually relevant propositions.

If a predicate (verb or adjective) is to be focused, a nominalizer must be present between the predicate and the particle.³ Consequently, the dummy verb *ha* 'do' is introduced to mark tense:

- (4) a. Mary-nun yeppu-ki-**man** hay-ss-ta.
 Mary-Top pretty-Nml-only do-Past-Decl
 'Mary was only pretty (e.g. she was not smart).'

³ In Korean, adjectives show the same syntactic distribution as verbs. For example, tense morphemes directly combine with adjectives as well as verbs. Note that there is no copula in (i).

- (i) Mary-nun yeppu-ess-ta.
 Mary-Top pretty-Past-Decl
 'Mary was pretty.'

b. Mary-ka	chayk-ul	sa-ki-man	ha-n-ta.
Mary-Nom	book-Acc	buy-Nml-only	do-Pres-Decl

‘Mary only buys books (e.g. she doesn’t read them).’

2.2.2 Case Marking

Another noteworthy property of the particle *man* is the position of case markers and postpositions when they co-occur with the particle. There is a well-known distributional asymmetry between case markers and postpositions. The particle *man* must precede case markers, but follow postpositions (S. Cho 2000 among others).⁴

Sentences in (5) and (6) illustrate how nominative and accusative markers are positioned with respect to the particle.⁵ Note that case markers are optional and can be dropped in (5).

- (5) a. Mary-man-(i) oassta.
 Mary-only-Nom came
 ‘Only Mary came.’
- b. Mary-ka thongsalon-man-(ul) kongpwuhanta.
 Mary-Nom syntax-only-Acc study
 ‘Mary studies only syntax.’

The other possible order, where case markers precede *man*, is ungrammatical:

⁴ I use the term “case markers” to refer only to grammatical case markers such as nominative, accusative, and genitive. I do not intend the term to cover postpositions, which might be called “semantic case markers.”

⁵ Note that in some languages (e.g. Hungarian) focus particles tend to appear outside case markers, as pointed out to me by Sabine Iatridou. I presume that this is due to the fact that focus particles in those languages are a kind of an adverbial, whereas case markers are inflectional affixes that are attached to DPs. Therefore, case markers are expected to be closer to DPs than focus particles. As we will see shortly, I do not assume that there is one single underlying ordering between these elements, and therefore do not derive the surface ordering in Korean from a different underlying ordering where case markers are closer to the DP than the focus particle. See also section 2.7.1 for a related discussion.

- (6) a. *Mary-**ka-man** oassta.⁶
 Mary-Nom-only came
 ‘(Intended) Only Mary came.’
- b. *Mary-ka thongsalon-**ul-man** kongpwuhanta.
 Mary-Nom syntax-Acc-only study
 ‘(Intended) Mary studies only syntax.’

The particle also precedes the genitive marker, but the genitive case marker is not optional, unlike nominative and accusative.

- (7) Mary-**man**-(uy) chayk
 Mary-only-Gen book
 ‘Only Mary’s book, i.e. the book belonging to Mary alone’

In contrast to case markers, postpositions including the dative marker must precede the particle *man*.⁷ Also, postpositions are obligatory.

- (8) a. Mary-nun John-*(hako)-**man** nonta.
 Mary-Top John-with-only play.
 ‘Mary plays only with John.’

⁶ The nominative marker in Korean alternates between *i* and *ka* ((5a) vs. (6a)). The former follows a closed syllable, and the latter an open syllable. The same is true of the accusative marker *ul* (after a closed syllable) and *lul* (after an open syllable).

⁷ There is one exception to this generalization. Postposition *lo* ‘with’, a marker for Instrumental, can either precede or follow the particle *man*, as shown in (i). Yet, different orderings match with different truth conditions. See section 2.9.1 for discussion.

- (i) a. kukot-ey-nun cacenke-**lo-man** ka-lswuiss-ta.
 there-to-Top bicycle-with-only go-can-Decl
 ‘One can get there only on a bicycle (no other means are allowed).’
- b. kukot-ey-nun cacenke-**man-ulo** ka-lswuiss-ta.
 there-to-Top bicycle-only-with go-can-Decl
 ‘One can get there with only a bicycle (no other means are needed).’

- | | | |
|----------------------------------|--------------------|---------------|
| b. Mary-nun | Boston-*(eyse)-man | salassta. |
| Mary-Topic | Boston-in-only | lived |
| 'Mary has lived only in Boston.' | | |
| | | |
| c. Mary-ka | John-*(ekey)-man | sakwahayssta. |
| Mary-Nom | John-to-only | apologized |
| 'Mary apologized only to John.' | | |

As with case markers, the reverse order is not grammatical:

- (9)
- | | | |
|----------------------------------|-----------------|---------------|
| a. *Mary-nun | John-man-hako | nonta. |
| Mary-Top | John-only-with | play. |
| 'Mary plays only with John.' | | |
| | | |
| b. *Mary-nun | Boston-man-eyse | salassta. |
| Mary-Topic | Boston-only-in | lived |
| 'Mary has lived only in Boston.' | | |
| | | |
| c. *Mary-ka | John-man-ekey | sakwahayssta. |
| Mary-Nom | John-only-to | apologized |
| 'Mary apologized only to John.' | | |

With this background, the next section goes into the scopal behavior of the particle *man*.

2.3 The Scope Facts

This section presents the scopal behavior of the particle *man*, with special focus on how the phrase that *man* is attached to (henceforth the *man*-phrase) scopally interacts with another quantificational element in scrambling contexts. As already mentioned in chapter 1, the particle *man* forms a constituent with the phrase it is attached to, and thus

it can undergo scrambling just like other constituents do in Korean. Now the question is how the particle takes scope in general, and whether scrambling affects this general pattern. Also interesting is whether the scope pattern of the *man*-phrase conforms to that of QPs. Surprisingly, we find that the scope of the scrambled *man*-phrase depends upon the syntactic environment in which it appears. Specifically, its scope varies with its morphological marking. If a *man*-phrase is case-marked, its scope is fixed to its case position no matter where it appears in the sentence. By contrast, if it is marked by a postposition, its surface position affects scope relations. The discussion leads to the conclusion that this non-uniform scope pattern cannot be accounted for if the particle *man* is a scope-bearing element.

2.3.1 The Scope Pattern of *Man*-phrases

Let us start with case-marked *man*-phrases (e.g. *Mary-man-ul* ‘Mary-only-acc’). Case-marked *man*-phrases **appear** to obligatorily reconstruct in clause-internal scrambling. That is, clause-internal scrambling of a *man*-phrase does not induce an ambiguity. Relevant examples are illustrated below.

- (10) a. **Motun-salam-i** John-**man-ul** salanghanta.
 every-person-Nom John-only-Acc love
 ‘Everyone loves only John.’
 (i) Everyone loves John and no one else. (*every* > *only*)
 (ii) *John is the only one whom everyone loves. (**only* > *every*)
- b. John-**man-ul**₁ [**motun-salam-i** t₁ salanghanta.]
 John-only-Acc every-person-Nom love
 ‘(Lit.) Only John, everyone loves *t*.’
 (i) Everyone loves John and no one else. (*every* > *only*)
 (ii) *John is the only one whom everyone loves. (**only* > *every*)

The sequence of a universal quantifier and a *man*-phrase in (10a) only allows a surface scope reading whereby *motun-salm* ‘everyone’ has wider scope than *John-man-ul* ‘only John’. So (10a) is true if and only if each person loves John and no one else. The other reading, where John is the only one whom everyone loves, is not available. In (10b), the *man*-phrase is scrambled across the subject quantifier. Here the scope relation remains the same as in (10a); wide scope for the *man*-phrase is still not possible.⁸ Therefore, both (10a) and (10b) are judged to be false if anyone in the discourse domain loves John and someone else too, even if John is the only person who is loved by everyone. Notice that the particle *man* precedes the case marker, as already mentioned in the previous section.

Now we turn to *man*-phrases marked by a postposition. Postposition-marked *man*-phrases show a different scopal behavior from case-marked ones. If a *man*-phrase is marked by a postposition, it can take scope in the surface position. Importantly, it can take scope in the scrambled position, thus creating an ambiguity, as shown in (11).

- (11) a. **Motun-salam-i** **John-hako-man** **akswuhayssta.**
 every-person-Nom John-with-only shook_hands
 ‘Everyone shook hands only with John.’
 (i) Everyone shook hands with John and with no one else. (*every* > *only*)
 (ii) *John is the only one with whom everyone shook hands. (**only* > *every*)
- b. **John-hako-man₁** [**motun-salam-i** **t₁** **akswuhayssta.**]
 John-with-only every-person-Nom shook_hands
 ‘(Lit.) Only with John, everyone shook hands *t*.’
 (i) Everyone shook hands with John and with no one else. (*every* > *only*)
 (ii) John is the only one with whom everyone shook hands. (*only* > *every*)

⁸ The *man*-phrase can take scope over the subject QP if it appears in the S-initial position without any case marker, as in (i). Thus the sentence in (i) is ambiguous, unlike (10b). See section 2.8.

- (i) **John-man₁** [**motun-salam-i** **e₁** **salanghanta.**]
 John-only every-person-Nom love
 ‘Only John, everyone loves *e*.’
 a. Everyone loves John and no one else. (*every* > *only*)
 b. John is the only one whom everyone loves. (*only* > *every*)

Without scrambling, the base order between the universal quantifier and the *man*-phrase determines the scope relation, thus (11a) is not ambiguous. However, if the *man*-phrase is scrambled as in (11b), it can also take scope over the subject quantifier, thus the sentence becomes ambiguous. Note also that the particle follows the postposition.

This contrast between case-marked and postposition-marked *man*-phrases is most clearly manifested in double object constructions, where true minimal pairs can be constructed. The indirect object in the Korean double object construction can be marked either with accusative case or by a dative postposition.⁹ Surprisingly, the scope of the scrambled *man*-phrase depends upon how the indirect object is marked.

- (12) a. **Motun-salam-i** **Mary-ekey-man/man-ul** **senmwul-ul** **cwuessta.**
 every-person-Nom Mary-to-only-Acc gift-Acc gave
 ‘Everyone gave a gift only to Mary.’
 (i) Everyone gave a gift to Mary and to no one else. (*every* > *only*)
 (ii) *Mary is the only person that everyone gave a gift to. (**only* > *every*)
- b. **Mary-man-ul₁** [**motun-salam-i** **t₁** **senmwul-ul** **cwuessta.**]
 Mary-only-Acc every-person-Nom gift-Acc gave
 ‘(Lit.) Only Mary, everyone gave a gift *t*.’
 (i) Everyone gave a gift to Mary and to no one else. (*every* > *only*)
 (ii) *Mary is the only person that everyone gave a gift to. (**only* > *every*)
- c. **Mary-ekey-man₁** [**motun-salam-i** **t₁** **senmwul-ul** **cwuessta.**]
 Mary-to-only every-person-Nom gift-Acc gave
 ‘(Lit.) Only to Mary, everyone gave a gift *t*.’
 (i) Everyone gave a gift to Mary and to no one else. (*every* > *only*)
 (ii) Mary is the only person that everyone gave a gift to. (*only* > *every*)

⁹ Cross-linguistically, it is controversial whether the dative marker belongs to postpositions or case markers. In Korean, however, dative markers have been shown to pattern with postpositions rather than with case markers on the basis of syntactic tests such as quantifier floating. The scope facts presented here also support this classification. See Kuh (1987), O’Grady (1991), and Urushibara (1991) for arguments along this line.

When there is no scrambling, the base order determines the scope relation, as in the previous cases. In (12a), the subject QP takes scope over the *man*-phrase irrespective of what kind of marker is used. When scrambling takes place, however, the marking on the indirect object makes a difference. If it is marked with accusative case, the *man*-phrase seems to obligatorily reconstruct, as in (12b). If it is marked by a dative postposition, the *man*-phrase seems to optionally reconstruct, as in (12c).

2.3.2 The Scope Puzzle




This non-uniform behavior of *man*-phrases contrasts with the scopal behavior of run-of-the-mill quantifier phrases. As is well known, scrambled QPs optionally reconstruct and induce an ambiguity in so-called scope-rigid languages (see Hoji 1985 for Japanese, Ahn 1990, Sohn 1995 for Korean). The sentences in (13) exemplify this point for Korean.

- (13) a. **Nwukwunka-ka** **manhun-salam-ul** **salanghanta.**
 someone-Nom many-person-Acc love
 ‘Someone loves many people.’
 (i) There is someone who loves many people. (*some* > *many*)
 (ii) *There are many people who are loved by someone. (**many* > *some*)
- b. **Manhun-salam-ul₁** [**nwukwunka-ka** **t₁** **salanghanta.**]
 many-person-Acc someone-Nom love
 ‘(Lit.) Many people, someone loves *t*’
 (i) There is someone who loves many people. (*some* > *many*)
 (ii) There are many people who are loved by someone. (*many* > *some*)

When two quantifiers are in their base position, as in (13a), the surface word order determines the scope relation between the two.¹⁰ When there is scrambling, however, the

¹⁰ There are some researchers (e.g. Hayashishita 2000) who doubt scope rigidity and argue for an ambiguity of sentences like (13a). Note that the debate on this issue does not bear on the puzzle

wide scope reading of the object QP becomes available, as in (13b). The scrambled QP can but need not undergo reconstruction, thus the sentence is ambiguous. Furthermore, the morphological marking on a QP does not affect the scope of the scrambled QP; thus a QP marked by a postposition behaves in the same manner as an accusative-marked QP. A schematic summary of the scope patterns is given in (14), where the solid line indicates obligatory reconstruction, and the dotted line optional reconstruction. The non-scrambled versions of each case are omitted since they all pattern in the same way.

- (14) a. [TP DP-man-Acc₁ [TP QP t₁ verb]] (unambiguous: 10b & 12b)

 b. [TP PP-man₁ [TP QP t₁ verb]] (ambiguous: 11b & 12c)

 c. [TP QP₁ [TP QP t₁ verb]] (ambiguous: 13b)


Let's suppose that the *man*-phrase is a QP of type $\langle e, t \rangle$, that is, the set of properties that no one other than John has (J.-W. Choe 1998).¹¹ Then the non-ambiguity in (14a) is puzzling. Apparently, it undergoes obligatory reconstruction when scrambled, unlike QPs. In order to account for this frozen scope effect, one might stipulate that the *man*-phrase is a special QP that can only undergo PF movement/scrambling; then its surface

presented here. Whether or not one accepts scope rigidity for sentences with base order, it is agreed that that scrambled QPs induce ambiguity, which makes the scope facts more puzzling.

¹¹ In this approach, *John-man* 'John-only' has the entry in (i) as its denotation, and *man* has (ii) as its lexical entry, where ALT is the set of alternatives created by the focus marking (see Rooth 1985).

(i) $\llbracket \text{John-man} \rrbracket = \lambda P_{\langle e, t \rangle}. P(\text{John}) = 1 \ \& \ \forall z \in \text{ALT}(\text{John}): P(z) = 1 \rightarrow z = \text{John}$

(ii) $\llbracket \text{man} \rrbracket = \lambda x_e. \lambda P_{\langle e, t \rangle}. P(x) = 1 \ \& \ \forall z \in \text{ALT}(x): P(z) = 1 \rightarrow z = x$

But the problem noted here does not hinge on what kind of entry we adopt for *man*. The same problem arises as long as we identify *man* as a quantificational element. E.g. the Roothian account of *only* for the particle *man* runs into the same problem.

position would not affect interpretation at LF (see Aoun and Benmamoun 1998, Sauerland and Elbourne 2002 for PF movement). However, this account lacks reasonable motivation, and faces empirical problems once we consider (14b). The stipulation does not hold of the case of PP-*man*, and we need another stipulation to distinguish the two cases. Any account that treats the *man*-phrase as a QP without further assumptions would fail to account for both the non-ambiguity of (14a) and the ambiguity of (14b).¹² A proper analysis must derive the scope patterns without making stipulations, and also account for the correlation between the morphological shape of the *man*-phrase and its scope behavior.

2.3.3 Digression: Test of Ambiguity

The ambiguous sentence in (11b) is repeated below as (15).

- (15) John-hako-man₁ [motun-salam-i t₁ akswuhayssta.]
 John-with-only every-person-Nom shook_hands
 ‘(Lit.) Only with John, everyone shook hands *t*.’
 (i) Everyone shook hands with John and with no one else. (*every* > *only*)
 (ii) John is the only one with whom everyone shook hands. (*only* > *every*)

This sentence is true in a situation where each person shook hands only with John (reading (i)). However, the sentence is also true in a situation where each person shook hands with more than one person, as long as John is the only one with whom everyone shook hands (reading (ii)). Here one might think that we cannot tell whether (15) is really ambiguous. In every situation where every person *x* is such that *x* shook hands with John and with no one else, it is also true that John is the only one that everyone

¹² Another possible account is to employ semantic reconstruction (Cresti 1995, Rullman 1995) by assuming that the case-marked *man*-phrase always leaves a trace of a higher type ($T_{\langle et, t \rangle}$). In other words, the trace of the *man*-phrase cannot be of type *e* when it is case-marked. This account is not just empirically challenged (for the contrast between DP and PP), but it is also stipulative in that there is no principled reason why this should hold. The same criticism applies to an account which argues that the *man*-phrase scrambles to a position that is associated with obligatory reconstruction. This account also runs into a problem in the PP-*man* case.

shook hands with. That is, the wide scope reading of the subject quantifier (reading (i)) entails the wide scope reading of the *man*-phrase (reading (ii)). For this reason, the sentence in (15) may seem to lack the wide scope reading of the subject quantifier. A closer look, however, tells us that it is ambiguous. If we embed the sentence in downward entailing contexts such as conditionals or negation, the wide scope of *motun-salam* ‘everyone’ becomes clear.¹³

- (16) John-hako-man₁ [motun-eycatul-i t₁ akswuha-lyekoha-myun,]
 John-with-only every-women-Nom shake_hands-intend-if
- talun-namcatul-un akswuha-l-salam-ul chacki-ka elye-ulkeya.
 other-men-Top shake_hands-Rel-person-Acc find-Nom difficult-will

‘If every woman wants to shake hands only with John, it will be difficult for other guys to find someone to shake hands with.’

Imagine a situation in which each man is supposed to shake hands with a woman. In such a situation, the salient reading of the antecedent clause is that every woman wants to shake hands with John and with no one else, not that John is the only one with whom every woman wants to shake hands. If the first reading in (15) were not available, the antecedent and the consequent clauses of the conditional sentence in (16) would not form an appropriate discourse, contrary to fact. The same is true of negation.

- (17) John-hako-man₁ [motun-salam-i t₁ akswuhayssta]-nun-ket-un sasil-i anita.
 John-with-only every-one-Nom shook_hands-Rel-that-Top fact-Nom not_be
- ‘It is not the case that everyone shook hands only with John.’

In a situation where each person shook hands with two people, but John is the only one with whom everyone shook hands, the sentence in (17) can be judged to be true. This

¹³ I thank Danny Fox and Shoichi Takahashi for discussion on this point.

means that the wide scope of *every* over *only* is available (*not* > *every* > *only*). If it were not available, that is, if the sentence only allowed the other relation (*not* > *only* > *every*), the sentence would have to be judged to be false since John is the only one with whom everyone shook hands. Both tests confirm that the sentence is ambiguous.

2.4 The Proposal

This section spells out the main proposal that I will make in this chapter. I propose that the particle *man* is actually an agreement morpheme that marks the presence of a null head ONLY, which carries the meaning of English *only*. I also argue that the ordering among the particle, case marker, and postposition reflects the hierarchy of corresponding functional heads. This helps detect the position of the null ONLY head.

2.4.1 *Man* is an Agreement Morpheme

What does it mean for a focus particle to be an agreement morpheme? It means that the particle *man* is an indication of a focus head, just as the nominative case marker is an indication of the T(ense) head under standard assumptions. In that case, what kind of focus head is the particle agreeing with? The focus head that we are discussing here is of a special kind in that it carries a very specific meaning, namely exhaustivity, hence the name ONLY. Since the head ONLY carries the quantificational meaning that is attributed to the particle *man*, the particle ends up having no meaning of its own, and *man*-phrases (e.g. *John-man*) are referential expressions of type e.¹⁴ Therefore, the position of the ONLY head, not that of the particle, determines the scope relation with respect to other quantificational elements in the sentence.¹⁵

¹⁴ I will continue to gloss *man* as 'only' for the sake of convenience.

¹⁵ For the role of abstract heads in the semantics literature, see Karttunen (1977) for questions, and Laka (1990), Ladusaw (1992), von Stechow (1993), Beck & Kim (1997), Kelepir (2001), Penka (2002), and Ovalle & Guerzoni (2002) for negation. Also, Groenendijk and Stokhof (1984), Krifka (1995) and Fox (2003) postulate a null exhaustivity operator.

I propose (18) as the lexical entry of the head ONLY, where ALT is the set of alternatives created by focus marking. This is the result of replacing the focused element with contextually plausible alternatives (see Rooth 1985).

$$(18) \quad \llbracket \text{ONLY} \rrbracket = \lambda P_{\langle e, t \rangle} . \lambda x_e . P(x) = 1 \ \& \ \forall z_e \in \text{ALT}(x) : P(z) = 1 \rightarrow z = x^{16}$$

The ONLY head takes two arguments (a predicate and an individual), and asserts that the individual argument is the only element that satisfies the predicate argument. Since the individual argument is in focus, ALT(x) is a set of individuals which are contextually salient.¹⁷ The ONLY head takes the same arguments as English *only* when it forms a constituent with a DP, although the order of arguments is reversed (Horn 1969; see also footnote 11). Basically, it is a covert *only*.

2.4.2 Where is the ONLY Head Located?

The next question to ask, then, is where the ONLY head is located. I claim that the ONLY head can occur in several distinct positions in the clause, as long as the semantic conditions imposed by (18) are satisfied. In other words, there is no one fixed position for the ONLY head.¹⁸ Specifically, it can be above TP (high ONLY-P) or below TP (low ONLY-P). Now that the ONLY head can occur in various positions and is phonetically null, a crucial task is to detect the position of this head. I argue that the position of the ONLY head can be deduced, thanks to a strong correlation between morphology and

¹⁶ Admittedly, this is a simplified and informal entry of the exclusive particle – see for instance von Stechow (1997) regarding issues related to defining the entry of *only*. For now, the entry deals with one specific case where the focused phrase is an individual, and adjustments will be made when necessary (for PP and CP arguments). Also, I assume that ALT(x) is a function from an ordinary semantic value of x to its focus value in the sense of Rooth (1985).

¹⁷ As described in section 2.2, the particle can be attached to non-nominal elements as well (PPs and CPs); however, the entry given in (18) can deal with these cases, too, as will be shown later. See section 2.5.2 for PPs and section 2.9.4 for CPs.

¹⁸ A similar approach was taken for NegP in Beck & Kim (1997), Zanuttini (1997), and Cinque (1999). In particular, Zanuttini's (1997) position is similar to mine in that various positions of NegP are posited on the basis of scope interaction between negation and adverbs. Simpson & Wu (2002) also present a similar theory of focus where the position of FocP is not limited to a unique location in the left periphery, but occurs in a variety of positions.

syntax, as claimed by Baker (1985) under the name of the Mirror Principle.¹⁹ In particular, I argue that the relative order among the focus particle, case marker, and postposition reflects the hierarchy of corresponding functional heads.²⁰ Take for example *John-man-i* ‘John-only-nom.’ Since the particle *man* is closer to the DP than the case marker, we conclude by the Mirror Principle that the process that adds the particle *man* (or checks a relevant feature) precedes the process that adds the case marker *i*. This means that the ONLY head is lower than the nominative case checking/assigning head, namely T. By the same reasoning, we infer from the order *John-hako-man* ‘John-with-only’ that ONLY-P is higher than VP where PP is generated, assuming that PPs do not need licensing and thus do not move to a VP-external position as DPs do. Sometimes the order of the affixes is not enough to determine the position of the ONLY head, as in the case of *PP-man*. In those cases, the surface position of the *man*-phrase helps to disambiguate the structure, as will be shown shortly.

2.4.3 A Sample Derivation

Having said this, let us move to see how this works through an example. We start with a simple sentence in (19).

- (19) John-**man**-i oassta.
 John-only-Nom came
 ‘Only John came.’

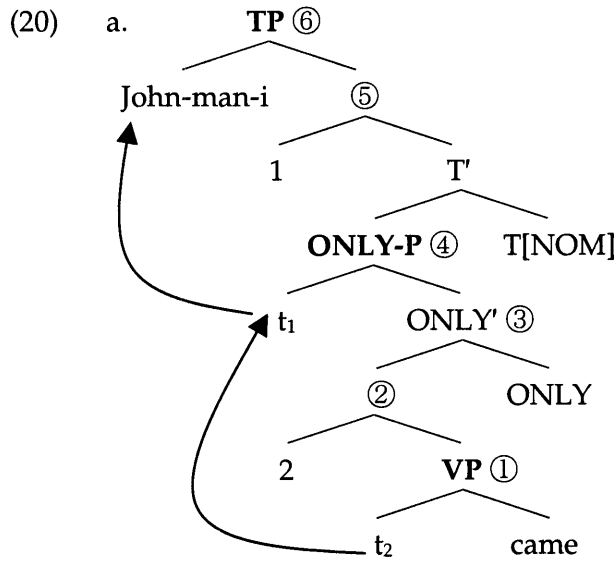
¹⁹ Baker’s (1985) original proposal is stated below in (i)

- (i) *The Mirror Principle*
 Morphological derivations must directly reflect syntactic derivations (and vice versa)
 (ii) . . . verb-affixA-affixB . . .

Applied to the example in (ii), this means that the order in which morphemes appear on the verb reflects the order in which the morphological processes that add those morphemes apply. That is, the process that adds affix A precedes the process that adds affix B.

²⁰ This idea was suggested to me by Danny Fox.

In (19), the particle *man* precedes the nominative marker, so the Mirror Principle tells us that ONLY-P is lower than TP. I claim that the subject, which is generated VP-internally, moves first to [Spec, ONLY-P],²¹ and then undergoes a second movement to [Spec, TP] to check the nominative feature (Chomsky 1995, S. Cho 2000). The DP picks up the affixes through derivation, and the order of affixes reflects the derivational steps.²² This is illustrated in (20a) along with the semantic composition in (20b). As one can verify, the tree correctly derives the meaning of the sentence.²³



b. $\llbracket \textcircled{1} \rrbracket = x \text{ came}$

$\llbracket \textcircled{2} \rrbracket = \lambda x. x \text{ came}$

by PA

$\llbracket \textcircled{3} \rrbracket = \lambda y. y \text{ came} \ \& \ \forall z \in \text{ALT}(y): z \text{ came} \rightarrow z = y$

by FA

²¹ *Man*-phrases can also be generated in [Spec, ONLY-P]. See section 2.8 for a distinction between movement and base-generation strategies.

²² Note that this is not a necessary assumption, and that the analysis can also be couched within the lexicalist hypothesis, which argues that the DP is inserted in the syntax fully inflected, that is, with all the affixes attached to the DP (Chomsky 1993). Under the lexicalist hypothesis, however, an additional assumption is required. If feature checking can be done *in-situ* by AGREE (Chomsky 2000), we need to assume that feature checking takes place from the innermost feature/affix outwards, as suggested in Chomsky (1995: 195). Otherwise, the effects of the Mirror Principle are hard to capture under these two assumptions. This point is independent of the particular use I make of the Mirror Principle, and readers are referred to relevant literature.

²³ I assume that case heads (T and Agro) are semantically vacuous.

$\llbracket ④ \rrbracket = u \text{ came} \ \& \ \forall z_e \in \text{ALT}(u): z \text{ came} \rightarrow z = u$	by FA
$\llbracket ⑤ \rrbracket = \lambda u. u \text{ came} \ \& \ \forall z_e \in \text{ALT}(u): z \text{ came} \rightarrow z = u$	by PA
$\llbracket ⑥ \rrbracket = \text{John came} \ \& \ \forall z_e \in \text{ALT}(\text{John}): z \text{ came} \rightarrow z = \text{John}$	by FA

In (20a), the focused phrase *John* undergoes focus movement to [Spec, ONLY-P], creating a lambda-predicate. This predicate is the first argument of the ONLY head, and the focused phrase in [Spec, ONLY-P] is the second argument. This movement is motivated both syntactically and semantically: syntactically, it is triggered for agreement/feature-checking (say, *man*-feature) purposes; semantically, it provides an argument for the ONLY head so that the interpretation can proceed. For these reasons, the movement is obligatory although it sometimes applies string-vacuously and has no effect on word order.

Notice that the lambda-abtractor assumed in the focus movement does not conform to Heim & Kratzer's (1998) interpretational mechanism (see the tree in (8b) in section 1.3 for an example). Specifically, the lambda-abtractor in the first movement of (20a) (index 2) is in an unusual place, not directly under the moved element (see also von Stechow 2001 for the same point). There are other possible implementations that do not involve this choice (e.g. late merge of the ONLY head or movement to the sister node of the ONLY head), but the analysis does not hinge on this issue.

The movement idea advanced here is similar in spirit to Beghelli & Stowell's (1994, 1997) position. They argue that scope is the by-product of agreement processes that take place through Spec-Head agreement. As each QP moves to its targeted scope position (at LF) in their approach, the focused phrase moves to the spec of the ONLY-P (in the overt syntax). In both approaches, the landing site determines the scope relation. Although this is not a traditional account of focus, it is an extension of the widespread accounts in the domain of wh-words and negative QPs to the domain of focused phrases (see Rizzi 1996 for the Wh-Criterion; Zanuttini 1991, Haegeman 1995, and Sohn 1995 for the Neg-Criterion). One might wonder why we complicate the system by introducing the abstract head. When we look at simple cases like (19), the motivation is not clear. Yet,

this approach offers a non-stipulative account of the scope pattern of *man*-phrases, as will be shown in the following two sections.

To sum up this section, I argued that the focus particle *man* is an agreement morpheme for an abstract head ONLY, which carries the exhaustive meaning of English *only*. In order to detect the position of the null ONLY head, I argued that the order of nominal affixes reflects the syntactic hierarchy of functional heads.

2.5 Deriving the Compositional Meaning

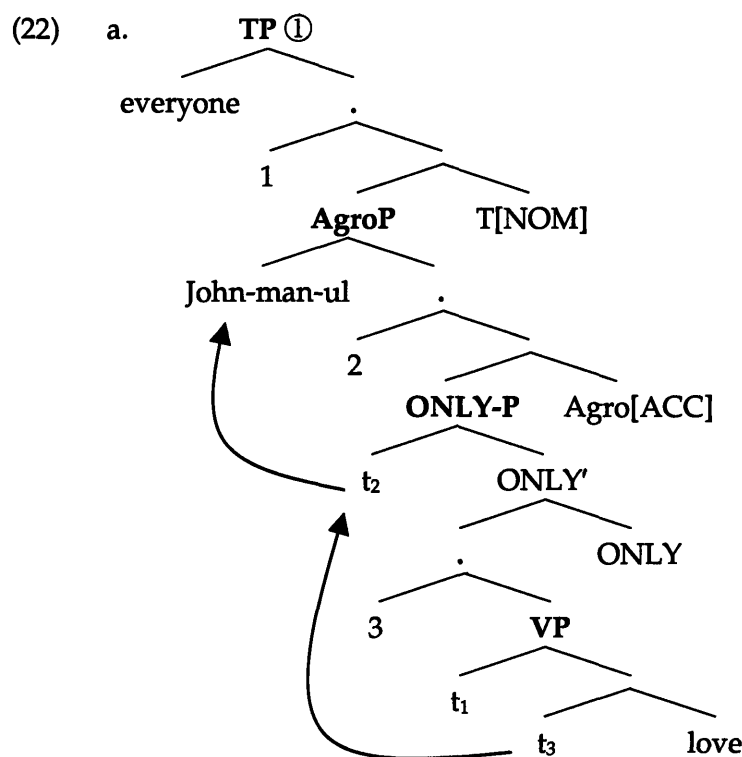
Based on the proposal made in the previous section, this section solves the scope puzzle noted in section 2.3. I first discuss case-marked *man*-phrases (section 2.5.1), and then turn to PP-*man* cases (section 2.5.2).

2.5.1 Case-Marked *Man*-Phrases

The scope pattern of the case-marked *man*-phrase is repeated in (21). The point here is that clause-internal scrambling of the *man*-phrase does not affect scope interpretation. Sentence (21b) is not ambiguous.

- (21) a. **Motun-salam-i** **John-man-ul** **salanghanta.**
 every-person-Nom John-only-Acc love
 ‘Everyone loves only John.’
 (i) Everyone loves John and no one else. (*every* > *only*)
 (ii) *John is the only one whom everyone loves. (**only* > *every*)
- b. **John-man-ul₁** [**motun-salam-i** **t₁** **salanghanta.]**
 John-only-Acc every-person-Nom love
 ‘(Lit.) Only John, everyone loves *t*.’
 (i) Everyone loves John and no one else. (*every* > *only*)
 (ii) *John is the only one whom everyone loves. (**only* > *every*)

Let us start with (21a). From the order *man-ul* ‘only-acc’, we conclude by the Mirror Principle that ONLY-P is lower than AgroP where Accusative is assigned/checked. The AgroP in turn is below TP which contains the universal quantifier in its spec position. Therefore, the universal quantifier takes scope over the ONLY head. The structure of (21a) is given in (22a) along with the semantic value of the top node in (22b). See the appendix for a detailed calculation.



b. $\llbracket \textcircled{1} \rrbracket = \text{For each person } x, x \text{ loves John \& } \forall z_e \in \text{ALT}(\text{John}): x \text{ loves } z \rightarrow z = \text{John}$

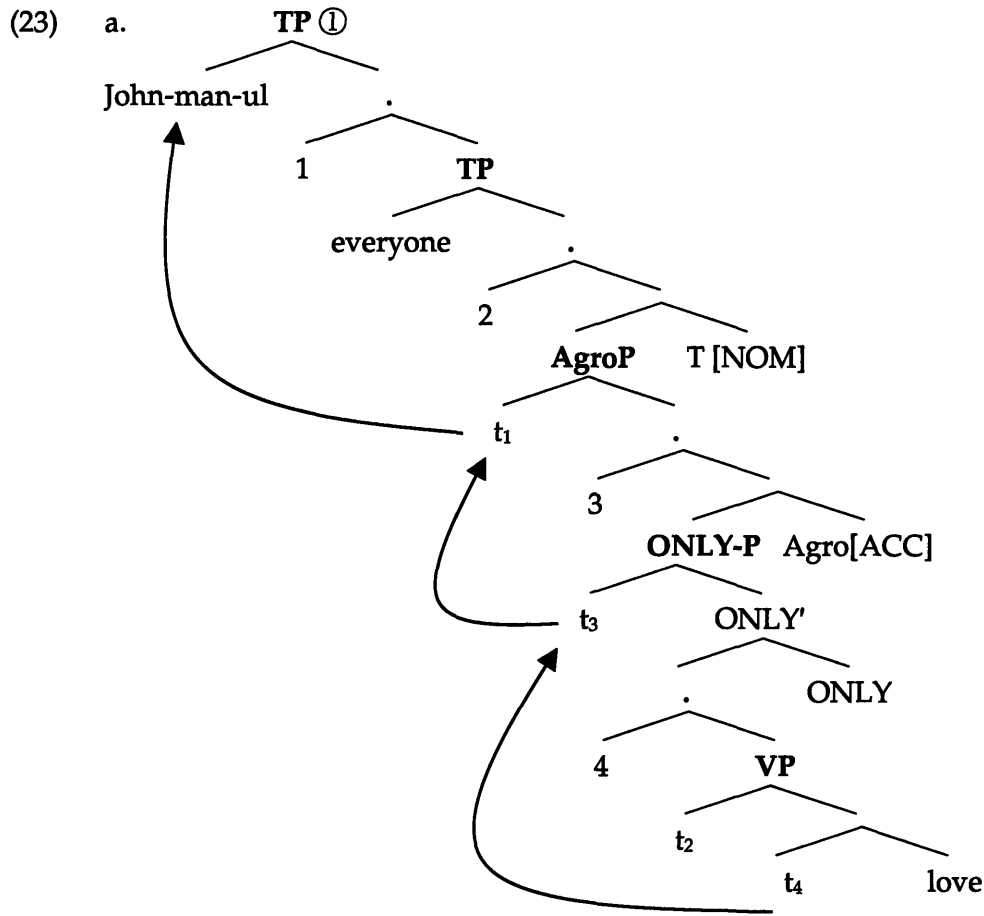
The reading in (22b) is the meaning we want: each person has the property of loving John and no one else. Note that we must not allow reconstruction of the subject QP to its θ -position (t_1), since that would produce the unattested reading (*only* > *every*). This is independently justified from the behavior of QPs in scope-rigid languages. If reconstruction of a subject were possible, sentences in the base order would be ambiguous, as in English (see (13) in section 2.3).

Alternatively, if we can employ only QR (instead of reconstruction) to account for scope ambiguity, we can do without this restriction. We can simply conclude that there is no covert quantifier movement in scope-rigid languages, and that the scope position of the subject QP is always [Spec, TP]. Since the subject QP does not reconstruct, there is no need to rule it out in the first place.²⁴ Another possibility, pointed out to me by Danny Fox and Alec Marantz, is to adopt Kratzer's (2000) proposal that the Voice head introduces the external argument. Under this hypothesis, there is no trace of the subject within VP, thus the issue of subject reconstruction does not arise.

Next, consider (21b) where *John-man-ul* 'John-only-acc' is scrambled to the sentence-initial position. Since *man* is a mere agreement morpheme, the *man*-phrase is a referential expression, not a QP. Given this, it naturally follows why scrambling of the *man*-phrase does not affect scope relations, since that is the case with referential expressions. This is what we expect from scrambling of an expression of type *e*, not $\langle et, t \rangle$. The structure of (21b) is given in (23a), where the clausal structure remains the same as in (22a) except that the *man*-phrase is adjoined to TP via scrambling.²⁵ The semantic value of the top node is in (23b). See the appendix for a detailed calculation.

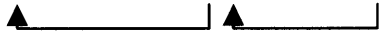
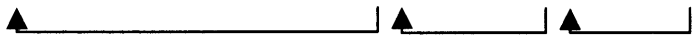
²⁴ See also Johnson & Tomioka (1997) for a claim that reconstruction does not target θ -positions even in scopally non-rigid languages like English.

²⁵ I assume that scrambling is TP-adjunction.



b. $\llbracket \textcircled{1} \rrbracket = \text{For each person } x, x \text{ loves John} \ \& \ \forall z_e \in \text{ALT}(\text{John}): x \text{ loves } z \rightarrow z = \text{John}$

Compare the semantic values in (22b) and (23b). They are the same: each person loves no one other than John. Even though *John* is interpreted in the scrambled position in (23a), the same reading obtains as when we interpret it in [Spec, ONLY-P]. This is because the ONLY head is below AgroP in both cases. Thus the apparent “reconstruction” effect is explained, even though there is no reconstruction of a QP in the real sense. What determines the scope relation is not the surface position of the particle, but the position of the ONLY head, which is not affected by scrambling. The following schemas represent the two structures for an easy comparison. The movement of the subject is not specified by an arrow, but just by the lambda-abtractor.

- (24) a. [TP everyone λx [AGRO_P John λu [ONLY-P u [λy [VP x y love]] ONLY]AGRO] T]
- 
- Case mvt. Focus mvt.
- b. [TP John λv [TP everyone λx [AGRO_P v λu [ONLY-P u [λy [VP x y love]] ONLY] AGRO] T]]
- 
- Scrambling Case mvt. Focus mvt.

One might wonder at this point why ONLY-P should be below Agro_P and if there is any principled reason to rule out ONLY-P above Agro_P, a question raised by many people. At this point, the present analysis does not offer a principled reason to rule out such a configuration. If such a structure exists, however, the derivation would result in a form in which the particle *man* is preceded by an overt case marker, for example **Mary-lul-man* ‘Mary-acc-only.’ This is not a possible form in Korean.²⁶ For now, I will assume that in such a configuration the case marker must be realized as a zero variant, which filters out the form if the case marker is overt. In other words, both *DP-Case-man* and *DP-man-Case* are possible configurations, but only the latter can be spelled out with overt case marking. This will be an extension of the well-known allomorphic variation of case morphemes in Korean (see footnote 6). We are simply adding another allomorph (a zero form) for both nominative and accusative markers, which appears when they are preceded by particles like *man* ‘only’ and *to* ‘also’.²⁷ The additive particle *to* disallows case marking in any position.

²⁶ Danny Fox and Heidi Harley suggested to me that we can account for the absence of the form *DP-Case-man* by assuming that case is the ultimate motivation that drives movement. Once the case feature is checked, the DP is stuck in its case position and no further movement takes place. Since no focus movement follows, the DP cannot pick up the particle *man*. However this account is only valid for the DP case, given that we do have movement to check only the focus feature in the *PP-man* case.

²⁷ Thanks to Alec Marantz for suggesting this idea.

2.5.2 Postposition-Marked *Man*-Phrases


This section turns to the scope pattern of the *PP-man* case. A *man*-phrase marked by a postposition does not have a fixed scope, unlike a case-marked one. Its scope seems to be affected by its surface position; that is, the readings available to a *PP-man* depend on its surface position. The data is repeated in (25).

- (25) a. **Motun-salam-i** **John-hako-man** **akswuhayssta.**
 every-person-Nom John-with-only shook_hands
 ‘Everyone shook hands only with John.’
 (i) Everyone shook hands with John and with no one else. (*every* > *only*)
 (ii) *John is the only one with whom everyone shook hands. (**only* > *every*)
- b. **John-hako-man₁** [**motun-salam-i** **t₁** **akswuhayssta.**]
 John-with-only every-person-Nom shook_hands
 ‘(Lit.) Only with John, everyone shook hands *t*.’
 (i) Everyone shook hands with John and with no one else. (*every* > *only*)
 (ii) John is the only one with whom everyone shook hands. (*only* > *every*)

In (25a), the *man*-phrase can only take scope below the universal quantifier, whereas in (25b) it can take scope either above or below the universal quantifier. The ambiguity of (25b) stands in contrast to the non-ambiguity of (21b) in the previous section.

Why is it that postposition-marked *man*-phrases are different from case-marked ones? The ordering among the affixes provides an answer to this question. Crucially, postpositions do not provide as much information about the position of the ONLY head as case markers do. Postpositions precede the particle *man* (e.g. *John-hako-man* ‘John-with-only’), which shows that ONLY-P is higher than VP, where PP is generated. But it does not tell us whether ONLY-P is higher than TP or lower than TP, whose spec is occupied by the subject QP. By contrast, case markers explicitly specify that ONLY-P is lower than AgroP or TP since they always follow the particle *man*.


With this contrast in mind, let us derive the scope patterns in (25). First, in (25a), ONLY-P is positioned above VP (as inferred from the morpheme order) but below TP. If ONLY-P were located above TP, we would expect the *man*-phrase to occur to the left of the subject QP. This is because focused phrases move overtly to [Spec, ONLY-P]. Thus the surface position of the *man*-phrase marks the upper bound for possible ONLY heads. The *man*-phrase can occur higher than ONLY due to scrambling, but not lower than ONLY. The structure of (25a) is represented in (26).

- (26) [TP everyone λx [ONLY-P with_John [λy [VP x y shake_hands]] ONLY] T]
- 

 Focus Movement

The PP, which is generated within VP, undergoes focus movement to [Spec, ONLY-P]. Since the subject QP is above ONLY-P in (26), the scope relation follows from this configuration: for each person x , x shook hands with John, and for all alternatives z to John, if x shook hands with z , z is John. I assume that the postposition moves along with the focused phrase in the overt syntax, but reconstructs at LF for semantic interpretation. Under this assumption, there is no need to adjust the entry of ONLY for the PP case.²⁸

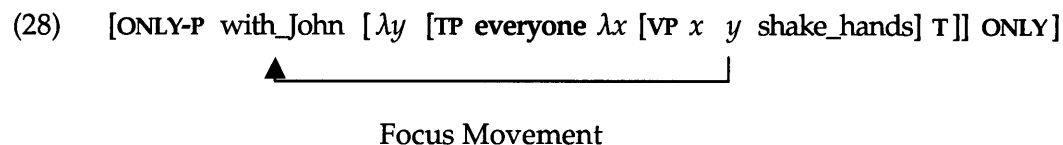
Let us next see the case of the ambiguous sentence in (25b). I argue that the two readings are due to different positions of ONLY-P, not to reconstruction of the *man*-phrase as a QP. On the first reading, where the subject QP takes scope over the *man*-phrase, ONLY-P is still below TP. The S-initial appearance of the *man*-phrase is due to scrambling that takes place after focus movement. Thus the clausal structure is the same as the one in (26) except that the PP is adjoined to TP. The same interpretation results, although the *man*-phrase is interpreted in the scrambled position.

- (27) [TP with_John λz [TP everyone λx [ONLY-P z [λy [VP x y shake_hands]] ONLY] T]]
- 

 Scrambling Focus Mvt.

²⁸ Thanks to Irene Heim for suggesting this possibility.

On the second reading of (25b), the ONLY head takes scope over the subject QP. That is, ONLY-P is positioned above TP. The S-initial appearance of the *man*-phrase is due to focus movement, not to scrambling. The structure is represented in (28).



Thus, the S-initial appearance of a PP-*man* could either be due to scrambling as in (27) or to focus movement as in (28), whereas that of a case-marked *man*-phrase could only be due to scrambling. The ordering between the postposition and the particle *man* is compatible with both positions of ONLY-P (high ONLY-P above TP and low ONLY-P below TP); and the surface postposition of the postposition-marked *man*-phrase does not distinguish focus movement from scrambling. This is why postposition-marked *man*-phrases trigger ambiguity in the S-initial position unlike case-marked ones. Overt case marking rules out the high ONLY-P, which brings about the scope-fixing effect.

This section has shown how the current proposal accounts for the scope patterns of *man*-phrases. It turns out that the apparent reconstruction of the *man*-phrase is not the reconstruction of a QP, and that the scope is determined by the position of the ONLY head. It was also shown that the difference between case-marked and postposition-marked *man*-phrases correlates with the distribution of the particle with respect to case markers and postpositions. The proposal derived this correlation without stipulations, unlike the QP approach under which the *man*-phrase is a QP that shows a non-uniform behavior.

2.5.3 Speculations on Scrambling

The current proposal derives the scope pattern of *man*-phrases by showing that a *man*-phrase is an expression of type *e*. Being an expression of type *e*, its scrambling does not affect scope relations. Behind this explanation lies the assumption that scrambling of a QP, which is of type $\langle et, t \rangle$, induces an ambiguity, which is indeed the case. The

question, then, is how the scrambled QP induces ambiguity, and why the *man*-phrase scrambles to begin with if it does not lead to a different interpretation.

As for the first question, there seem to be (at least) two ways to understand this. The first option is to argue that scrambling is an instance of overt QR in languages with no optional QR (Sohn 1995, Miyagawa 2003).²⁹ This overt movement creates a new scope relation that is otherwise not available. The original scope relation is also available if the copy in the trace position is interpreted (Chomsky's (1993) Copy Theory of movement). The second option is to distinguish two kinds of scrambling: PF scrambling and LF scrambling. The former only affects sound, while the latter affects both sound and meaning.³⁰ If a QP undergoes PF scrambling, no semantic change is expected, and the scope relation remains the same. This will be the "reconstruction effect" from the perspective of the first approach. By contrast, if a QP undergoes LF scrambling, this amounts to overt QR and a new scope relation is created. The surface position of a QP is its LF position, where it is interpreted. The two positions seem to account for the scope-changing effect of scrambling to the same degree, and the issue is whether we can find empirical evidence to support one or the other position. I leave this matter for future research.

The second question goes beyond the specific case of the *man*-phrase. The more general question to be asked is why scrambling takes place to begin with. If one claims that scrambling is licensed only if it affects truth-conditions, this would be too strong since we are aware of scrambling that does not affect truth-conditions. An alternative might be to say that scrambling is licensed if it affects interpretation where 'interpretation' covers information structure as well as truth-conditions (see Ishihara 2000 for such a proposal for Japanese). Given this, scrambling of the case-marked *man*-phrase might belong to this category, along with the scrambling of referential expressions. Yet another option is to follow Krifka (1998a) and Fox (2000), who say that the phonological effect due to word order change is enough to motivate overt optional

²⁹ Optional QR means long QR that moves an object QP across the subject. By contrast, obligatory QR means short QR that moves an object QP to a clause-denoting expression (type *t*) due to type mismatch (Heim and Kratzer 1998).

³⁰ Thanks to Irene Heim for suggesting this idea.

operations like scrambling. At this point, I do not commit to any of the positions, and submit that there will be more possibilities beyond these two. More in-depth study is required on this topic, which is left for future investigation.

2.6 Further Predictions on Scope

This section enumerates and confirms various predictions of the null head analysis. I first provide an overview of scope predictions (section 2.6.1), and then show that each prediction is indeed borne out (sections 2.6.2 through 2.6.4). The result lends further support to the proposed analysis.

2.6.1 An Overview

The first prediction is that multiple occurrences of the particle *man* would be able to indicate the presence of a single instance of the ONLY head. Suppose that ONLY-P could host more than one focused phrase in its spec position. In that case, the number of particles in a sentence would not necessarily match the number of ONLY heads in the syntactic tree. Interpretation would depend on the number of ONLY heads, not on the number of particles.

The second prediction is that if the scrambled *man*-phrase contains a scope-bearing element, the scope of the new scope-bearing element can be dissociated from the ONLY head.³¹ This is so because the new scope-bearing element, contained in the *man*-phrase, can be interpreted in the scrambled position, whereas the ONLY head can still be lower than TP. Suppose there is a subject QP intervening between the scrambled *man*-phrase and the low ONLY head. Then the subject QP would be able to take scope between the new scope-bearing element and the ONLY head.

The third prediction relates to the correlation between the morpheme order and the scope-fixing effect. Suppose that some other kind of affix can follow the particle *man*

³¹ Since the first argument of ONLY is of type e, scope-bearing elements that can appear in that position are very limited. One candidate to be introduced shortly is the conjunction (*k*)*wa* 'and' which forms a group individual.

just like a case marker, but that the syntactic head that licenses this affix can be positioned above TP, unlike case markers. Now scramble the *man*-phrase marked with this affix across the subject QP. We predict that the scrambled sentence will be ambiguous. From the order *man-affix*, we infer that the ONLY head is lower than the syntactic head that licenses that affix, but it does not say more than that. Since the relevant head can be above TP, it is compatible with both positions of the ONLY head (above TP and below TP). Thus, no scope-fixing effect is expected.

2.6.2 Multiple Occurrences

Multiple occurrences of the particle *man* can indicate the presence of a single instance of the ONLY head.³² Therefore, when the particle occurs twice in a sentence, the sentence is ambiguous between one ONLY and two ONLY heads, as illustrated in (29).

- (29) John-*man* sakwa-*man* mekesse.³³
 John-only apple-only ate
 ‘Only John ate only apples.’

- (i) John is the only one who ate only apples. Others ate other fruits as well as apples.
 (ii) John is the only one who ate anything, and he ate only apples (not other fruits).

The first reading involves two ONLY heads. It says John is the only one who has the property of eating only apples. By contrast, the second reading involves just one ONLY head, and says that the pair <John, apples> is the only element that satisfies the eating relation.³⁴ Here the second reading is interesting. If the particle *man* carried the exclusive

³² Thanks to Kai von Fintel and Danny Fox for bringing this prediction to my attention.

³³ Korean does not have overt determiners, and thus bare nouns appear in argument positions without any problem. I assume that bare nouns in Korean can be expressions of type *e*. They either undergo type-shifting (from <*e*, *t*> to *e*), or inherently are of type *e*, as claimed in Chierchia (1998) for languages that lack determiners.

³⁴ Contexts where the two interpretations are appropriate are given in (i) and (ii) respectively.

meaning, the second reading would not arise. Only the first reading is predicted. This lends further support to the claim that *man* is a mere agreement morpheme.

Let me briefly mention how the two readings are derived syntactically. In the first reading of (29), both subject and object undergo focus movement to the spec of two separate ONLY heads (one below TP and the other below AgroP). Then, each of them moves to case-checking positions ([Spec, TP] and [Spec, AgroP] respectively). Thus, in both subject and object, *DP-man* is a realization of *DP-man-Case*. In the second reading of (29), by contrast, both subject and object undergo case-checking movement before they move to the spec positions of the ONLY head, which is positioned higher than both TP and AgroP. Thus, in both subject and object, *DP-man* is a realization of *DP-Case-man*. The ambiguous structure of *DP-man* in the two derivations leads to an interesting prediction, given that case markers can be overt only in the configuration *DP-man-Case*. The prediction is that if case markers are overt, only the first reading will be available. This prediction seems to be borne out. If case marking is overt, the ambiguity disappears, although the judgment here is subtle.

This prediction would not arise under an alternative structure for the sentence with overt case markers. Suppose that a single ONLY head is positioned right above VP but below AgroP. Under such a structure, both DPs undergo focus movement first, and then move on to their case positions. Whether case marking is overt or not, the second reading of (29) is predicted to be available. This alternative structure, however, is rejected, given that adjacent morphemes in word structure must reflect adjacent

-
- (i) A: Ecey John-kwa-Mary-nun sakwa-man mekesse.
 yesterday John-and-Mary-Top apple-only ate
 ‘Yesterday, both John and Mary ate only apples.’
- B: Aniya. John-**man** sakwa-**man** mekesse. Mary-nun pay-to mekesse.
 No John-only apple-only ate Mary-Top pear-also ate
 ‘No (you’re wrong). Only John ate only apples. Mary ate pears, too.’
- (ii) A: Ecey John-un sakwa-lul, Bill-un pay-lul, kuliko Tom-un banana-lul mekesse.
 Yesterday John-Top apple-Acc Bill-Top pears-Acc and Tom-Top banana-Acc ate
 ‘Yesterday, John ate apples, Bill ate pears, and Tom ate bananas.’
- B: Aniya. John-**man** sakwa-**man** mekesse. Talun-aytul-un anwuketto an mekesse.
 No John-only apple-only ate other-kids-Top anything Neg ate
 ‘No (you’re wrong). Only John ate only apples. The other kids didn’t eat anything.’

projections in the syntactic tree. One argument for this position comes from the scopal behavior of nominative-marked *man*-phrases (see section 2.9.2 for more discussion). In sentences with base order, a nominative-marked *man*-phrase (e.g. *Mary-man-i* ‘Mary-only-Nom’) takes scope over an object QP, which is accusative-marked. If the ONLY head were below AgroP, the object QP in [Spec, AgroP] would take scope over the *man*-phrase, contrary to fact. Thus we conclude that the ONLY head in this case must be right below TP. Just being lower than TP is not enough.

In order to compositionally derive the second reading, we need to introduce another entry of the ONLY head, which takes a relation (of type $\langle e, et \rangle$) and two individuals as arguments. The new entry given in (30) asserts that the pair $\langle x, y \rangle$ is the only element that satisfies the relation R:

$$(30) \quad \llbracket \text{ONLY} \rrbracket = \lambda R_{\langle e, \langle e, t \rangle \rangle} . \lambda x_e . \lambda y_e . R(x)(y) = 1 \ \& \ \forall z_e \in \text{ALT}(x) \forall w_e \in \text{ALT}(y) : R(z)(w) = 1 \\ \rightarrow z = x \ \& \ w = y^{35}$$

One can think of this as being parallel to negation in negative concord languages, where multiple occurrences of negation can contribute a single instance of negation. For instance, in the following English and Italian sentences, the multiple negations do not cancel each other out. The interpretation involves only one negation.

$$(31) \quad \text{a. Maria **didn't** say **nothing** to **nobody**.} \quad (\text{Nonstandard English})$$

³⁵ So far we have two entries of ONLY as given (i) and (ii).

(i) $\llbracket \text{ONLY}^1 \rrbracket = \lambda P_{\langle e, t \rangle} . \lambda x_e . P(x) = 1 \ \& \ \forall z_e \in \text{ALT}(x) : P(z) = 1 \rightarrow z = x$

(ii) $\llbracket \text{ONLY}^2 \rrbracket = \lambda R_{\langle e, \langle e, t \rangle \rangle} . \lambda x_e . \lambda y_e . R(x)(y) = 1 \ \& \ \forall z_e \in \text{ALT}(x) \forall w_e \in \text{ALT}(y) : R(z)(w) = 1 \rightarrow z = x \ \& \ w = y$

Irene Heim suggested that we can define a generalized version of ONLY in the following way. First, we define $\langle e^n, t \rangle$, where $n \geq 0$ and $\langle e^0, t \rangle = t$ and $\langle e^{n+1}, t \rangle = \langle e, \langle e^n, t \rangle \rangle$. With this notation, the generalized ONLY will have the following lexical entry:

(iii) $\llbracket \text{ONLY}^n \rrbracket = \lambda R_{\langle e^n, t \rangle} . \lambda x_1 . \dots . \lambda x_n . R(x_1) . \dots . (x_n) = 1 \ \& \ \forall y_1 . \dots . \forall y_n [y_1 \in \text{ALT}(x_1) . \dots . y_n \in \text{ALT}(x_n) \\ \ \& \ R(y_1) . \dots . (y_n) \rightarrow x_1 = y_1 \ \& \ \dots \ \& \ x_n = y_n]$

- b. Mario **non** ha parlato di **niente** con **nessuno**. (Italian)
 ‘Mario hasn’t spoken with anyone about anything.’ (Ladusaw 1992:237)

A widely accepted account for this phenomenon is that the apparent negative morpheme does not have negative force, but merely marks the presence of an abstract negation somewhere in the clause (see footnote 15 for references). The behavior of negation falls under the same account as given here if we assume that the spec position of the abstract negation can be multiply filled. In short, the unexpected readings attested with multiple occurrences of negation and the particle *man* support the abstract head analysis in both cases.

2.6.3 Scope Splitting

This section turns to the second prediction, concerning what happens if the *man*-phrase contains a scope-bearing element. As shown in section 2.5, the surface position of the particle *man* does not determine scope relations in the sentence. No matter where the *man*-phrase enters the semantic composition, the same interpretation obtains as long as the position of the ONLY head is fixed in one place. This means that the *man*-phrase does not always have to be in [Spec, ONLY-P] once it has passed through that position. Now the question is whether the scrambled *man*-phrase is required to be back in the spec of ONLY-P at LF, although interpretability alone does not require such reconstruction. For example, Beghelli & Stowell (1994, 1997) and Beghelli (1995) assign specific LF positions to different types of QPs. If the ONLY head is like one of the QP positions in Beghelli & Stowell’s approach, the *man*-phrase would have to reconstruct to the spec position. In other words, if the ONLY head turns out to have such a requirement, we would need to postulate an ONLY-criterion similar to the Wh-Criterion (Rizzi 1996) or the Neg-Criterion (Haegeman 1995).

One way to answer this question is to introduce a new scope-bearing element into the *man*-phrase and look at its scope-taking position in a scrambled sentence. Specifically, the question would be whether the scope of the new scope-bearing element can be dissociated from the ONLY head. If dissociation is possible, this would mean that

the *man*-phrase is interpreted in the scrambled position without being reconstructed to [Spec, ONLY-P]. The present analysis predicts this dissociation to be possible, and this section confirms that this prediction is borne out.³⁶ For this, we introduce a conjoined DP as a new scope-bearing element.

2.6.3.1 Background: Scrambling and Conjunction

Consider the following sentences, which exemplify the scope-bearing property of a conjoined DP.

- (32) a. Nwukwunka-ka John-kwa-Bill-ul salanghanta.
 Someone-Nom John-and-Bill-Acc love
 ‘Someone loves John and Bill.’
 (i) There is someone who loves both John and Bill. (*some* > *and*)
 (ii) *There is someone who loves John and someone who loves Bill. (**and* > *some*)³⁷
- b. John-kwa-Bill-ul₁ [nwukwunka-ka t₁ salanhanta.]
 John-and-Bill-Acc someone-Nom love
 ‘(Lit.) John and Bill, someone loves *t*.’
 (i) There is someone who loves both John and Bill. (*some* > *and*)
 (ii) There is someone who loves John and someone who loves Bill. (*and* > *some*)

The sentences in (32) contain an existential quantifier in the subject position and a conjoined DP in the object position. When there is no word order change, the sentence only allows a surface scope reading (*some* > *and*), as shown in (32a). In order for this reading to be true, there needs to be someone who loves both John and Bill. By contrast, if the object is scrambled, as in (32b), the sentence becomes ambiguous. The sentence

³⁶ I thank Danny Fox and Sabine Iatridou for bringing this question to my attention.

³⁷ Note that the reading in (i) entails the reading in (ii), but not vice versa. In situations where someone loves both John and Bill, it is always true that someone loves John and someone loves Bill. Since there is a situation where (i) is false but (ii) is true, namely one in which different people like John and Bill, the two readings are still distinct.

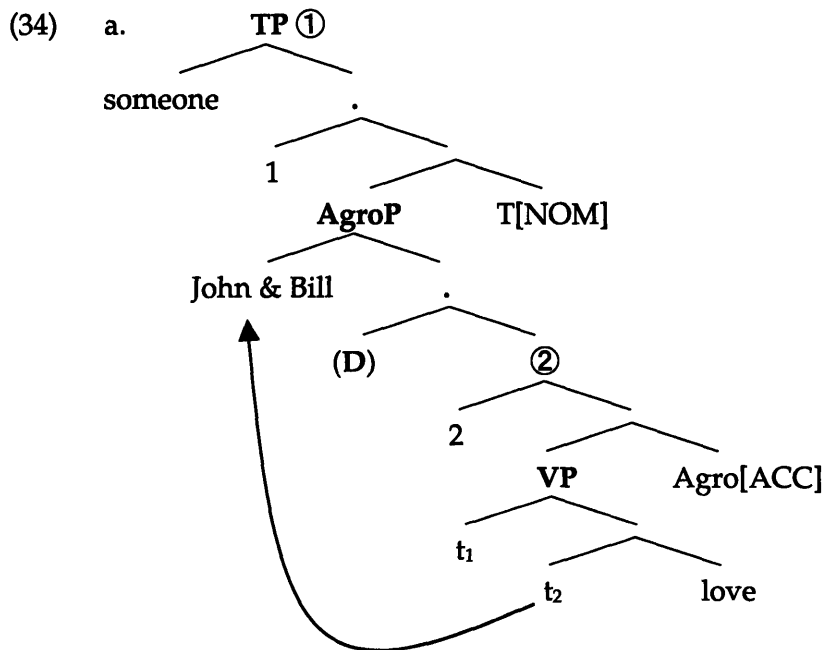
retains the original reading of (32a), but it also has a reading that is compatible with there being no person who loves both John and Bill.

In order to derive these two readings, we introduce a D(istributivity) operator in the syntactic tree. Following Link (1983), Roberts (1987), and Beck (2000) among others, I assume the following lexical entry for the D-operator.

$$(33) \quad \llbracket D \rrbracket = \lambda f_{\langle e, t \rangle}. \lambda X_e. \forall x \in X: f(x) = 1$$

The D-operator takes two arguments, a predicate and a group individual. The group individual is marked by a capital letter to be distinguished from an atomic individual. The D-operator asserts that the property f holds of all the atomic individuals that are part of the group individual X .

With this in mind, we first address the case of (32a). As has been assumed so far, the object DP moves to [Spec, AgroP] for case reasons. The structure is given in (34a) along with the semantic value of the top node in (34b).



b. $\llbracket \textcircled{1} \rrbracket = \text{There is someone } x \text{ such that } x \text{ loves John and } x \text{ loves Bill.}$

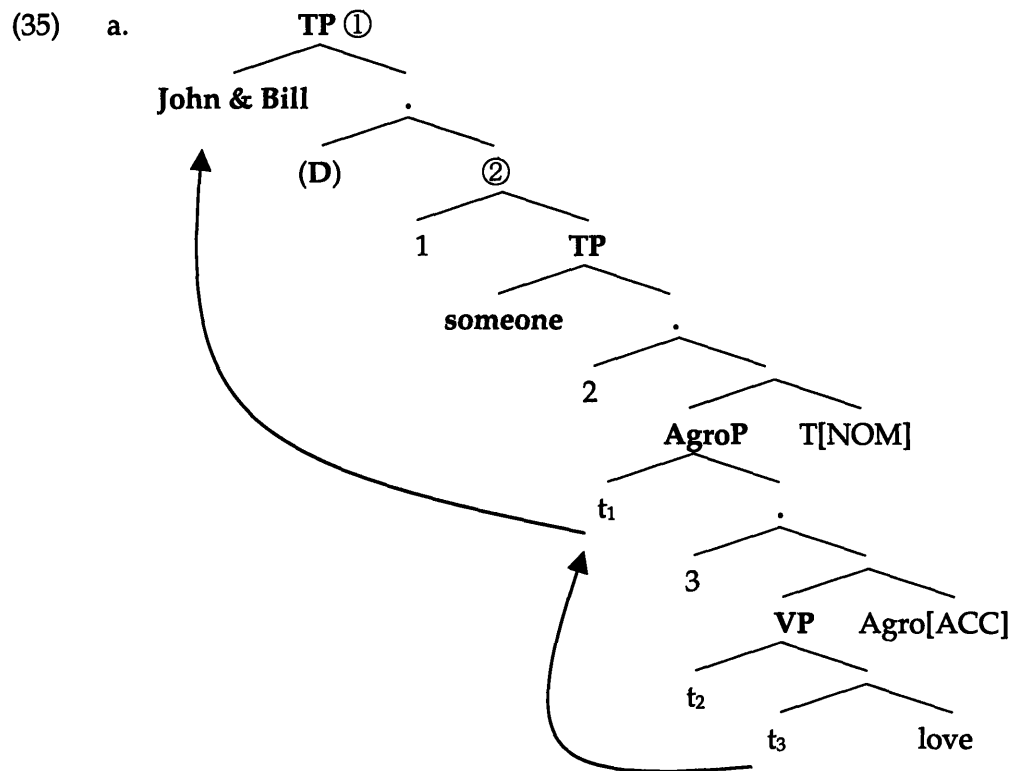
The movement of *John-kwa-Bill* 'John and Bill' creates a syntactic environment where the D-operator can be inserted.³⁸ The D-operator takes the lambda predicate in node ② and the conjoined DP as its arguments, and asserts that both John and Bill have the property denoted by node ②. This leads to the reading in (34b). Notice, however, that the same reading can be derived without the D-operator. In that case, the semantic value of the top node is that there is someone who loves the group individual that consists of John and Bill. Under the assumption that *love* is a distributive predicate in the object position,³⁹ this amounts to saying that there is someone who loves both John and Bill. The unavailability of the other reading in which two different people love John and Bill is due to an independent property of Korean, specifically the lack of covert movement like QR. One way to make this reading available is to move *John-kwa-Bill* 'John and Bill' at LF to a position higher than the subject quantifier and to insert the D-operator right below the moved element. This option, however, is not allowed, as manifested in the scope rigidity of the language.

Next, we turn to the scrambled sentence in (32b). Here the conjoined DP is adjoined to TP via scrambling, as illustrated in (35). Scrambling creates another position where the D-operator can be inserted, namely below the scrambled DP. Unlike the previous case in (34), the presence or absence of the D-operator gives rise to different semantic values. If the D-operator is not present, this results in the same reading as the non-scrambled sentence in (32a): there is someone who loves the group individual that

³⁸ I assume that the D-operator is inserted after movement of *John and Bill*. This is why the lambda abstractor is split from the moved element. See also Sauerland (1998).

³⁹ Distributive predicates are predicates that are true of a group iff they are true of all individuals making up the group (Scha 1984). It is plausible to assume that *love* is a distributive predicate in the object position, but this is not necessarily true. First, the size of the group affects interpretation. For example, it is possible to love a group without loving all the atomic individuals that compose that group, especially when the group is relatively large. But this is quite odd if the group only contains two atomic individuals (e.g. see the contrast between *I love the Korean people* and *I love my parents*). Secondly, the ambiguity between non-distributive and distributive reading does exist in object position as well. Suppose, for example, that you weighed John and Bill together on a scale; so you knew how much they weighed together, but didn't know how much each of them weighed. In this example, 'weighing John and Bill' does not mean 'weighing John and weighing Bill.' Given these considerations, the equivalence of the two readings in (34) (the one with the D-operator and the other without the D-operator) is due to the lexical meaning of the predicate and our world knowledge, but it is not absolute equivalence. Thanks to Kai von Fintel, Danny Fox, and Irene Heim for pointing this out to me.

consists of John and Bill. Again, under the assumption that *love* is a distributive predicate in the object position, this means there is someone who loves both John and Bill. By contrast, if the D-operator is present, the distributive reading obtains.⁴⁰ It asserts that both John and Bill have the property denoted by node ②, which is the property of being loved by someone. This reading does not require the same person to love both John and Bill. The value of the top node is given in (35b). See the appendix for details.

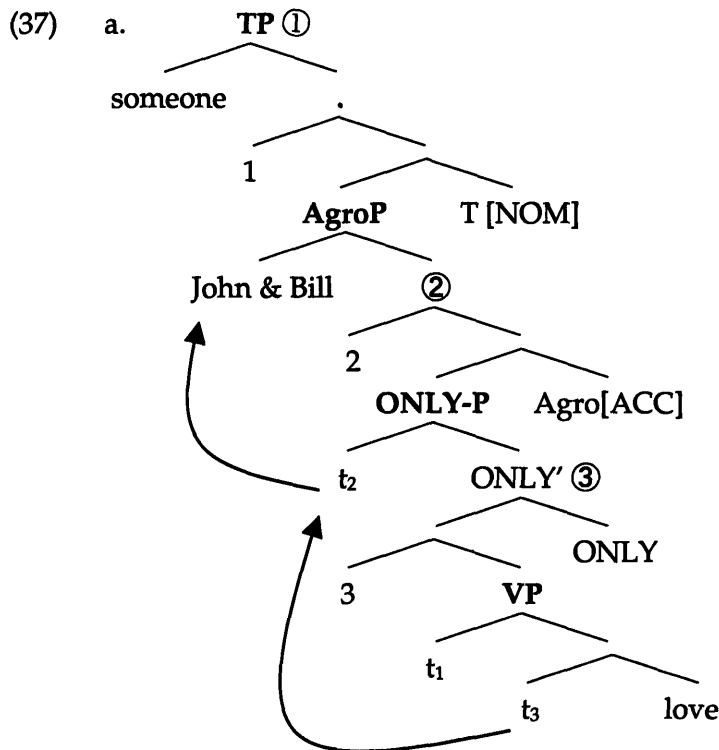


b. $\llbracket \textcircled{1} \rrbracket = \forall x \in J \& B$: there is someone who loves x , i.e. there is someone who loves John and there is someone who loves Bill.

⁴⁰ It is crucial that the D-operator is inserted below the scrambled DP. If the D-operator is inserted at a lower point, it can still produce the collective reading (*some > and*).

between the subject QP and the ONLY head remains the same; the former takes scope over the latter. What differentiates the two cases is where the conjoined DP takes scope. If the conjoined DP is interpreted in the scrambled position, the D-operator can apply and produce a new reading that is otherwise unavailable. This makes the scope of the conjunction split from the ONLY head (*and* > *some* > *only*).

Let me spell out how each reading is derived, starting with (36a). Based on the morpheme order *man-ul* 'only-acc', we conclude that the ONLY head is positioned lower than Agro. The structure of (36a) is represented in (37a) along with the value of the top node in (37b).



b. $\llbracket \textcircled{1} \rrbracket = \text{There is someone } x \text{ such that } x \text{ loves John and Bill \& } \forall z_e \in \text{ALT}(\text{J\&B}):$

$x \text{ loves } z \rightarrow z \in \text{J \& B}^{41}$

⁴¹ The lexical entry of ONLY is slightly modified in this example because a group individual is in focus. I assume that the set of alternatives to a group individual still includes atomic individuals. This is due to the existence of predicates that are not distributive in the object position (e.g. *weigh*;

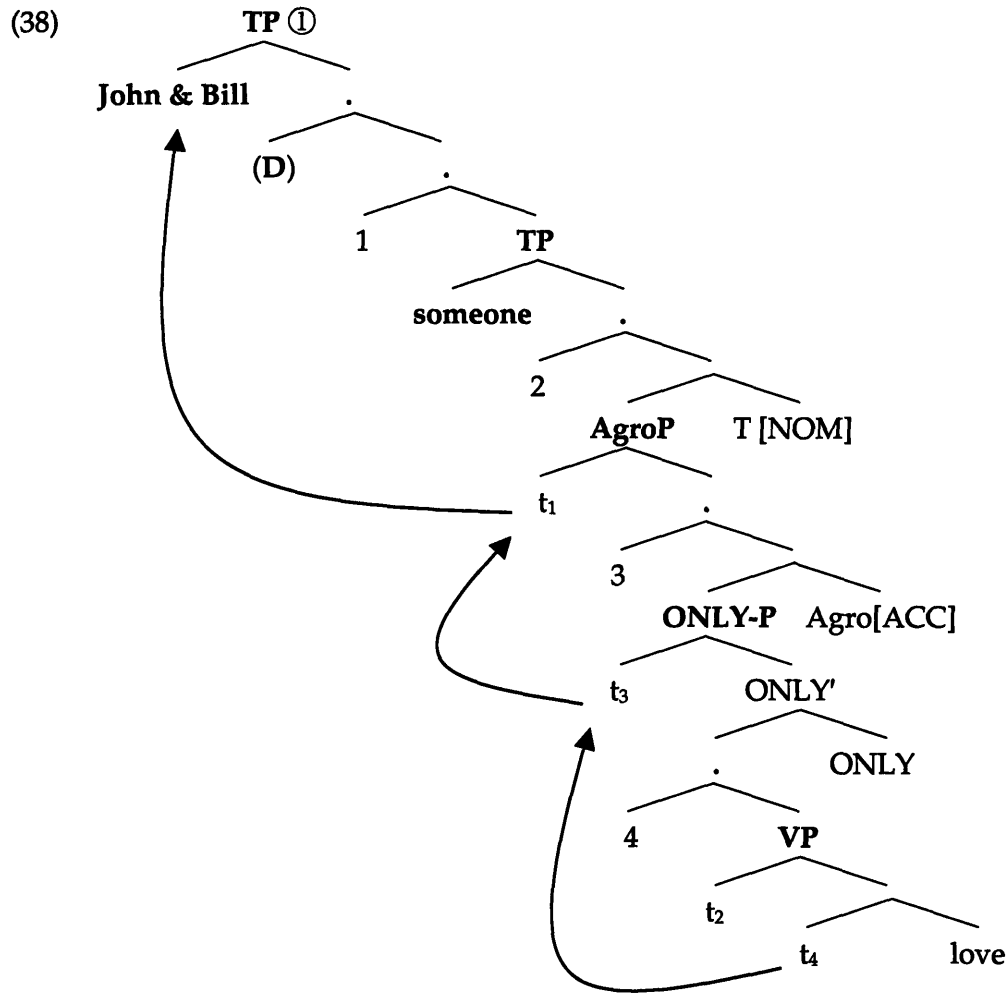
Note that we cannot apply the D-operator in this tree. There are two positions where the D-operator could be inserted: nodes ② and ③. In both cases, this would lead to a reading “there is someone who loves only John and loves only Bill.” There cannot be such an individual since this property is a contradiction; no one can simultaneously love only John and love only Bill. Therefore, the D-operator cannot be inserted in this tree.

Next consider the scrambled sentence in (36b). The scrambling of the conjoined DP creates a position where the D-operator can be inserted, as illustrated in (38) on the next page. In this structure, the readings diverge depending upon whether the D-operator is present or not. Without the D-operator, the first reading in (36b) obtains (*some > only > and*), which is the same as the case with no scrambling. For this reading to be true, there has to be someone who loves only John and Bill. That person does not love Tom, for example. The reading we are interested in (*and > some > only*) arises when the D-operator is present. In this reading, the one who loves only John does not love Bill and the one who loves only Bill does not love John. The two values of the top node are given in (39). The one in (39a) is without the D-operator and the one in (39b) is with the D-operator. See the appendix for a step-by-step derivation.

see footnote 39). Suppose that I weighed John and Bill together, but not separately. Then I could say “I weighed only John and Bill, so I don’t know how much each of them weighs by themselves.” If this is felicitous, the alternatives to *John and Bill* should include atomic individuals such as *John* and *Bill*. Under this assumption, we need to adjust the entry so that we do not wrongly rule out some elements from the set of alternatives. Note that the entry is intensionalized in order to encode the entailment relation.

- (i) $[\text{ONLY}]^w = \lambda P_{\langle e,t \rangle} . \lambda x_e . P(w)(x) = 1 \ \& \ \forall z_e \in \text{ALT}(x) : P(w)(z) = 1 \rightarrow [\lambda w' . P(w')(x) \Rightarrow \lambda w' . P(w')(z)]$

The revised entry says that $P(x)$ is true in w and if some alternative satisfies the predicate, the resulting proposition $P(z)$ is entailed by the presupposed proposition $P(x)$ (see also von Stechow 1997). With respect to our example, this means that if x loves z among the alternatives, z is a part of $J \& B$. That is, z is John, Bill, or John & Bill. I thank Irene Heim for pointing this out to me.



- (39) a. $\llbracket \textcircled{1} \rrbracket = \text{There is someone } x \text{ such that } x \text{ loves John and Bill \& } \forall z \in \text{ALT}(J \& B):$
 $x \text{ loves } z \rightarrow z \in J \& B$
- b. $\llbracket \textcircled{1} \rrbracket = \forall z \in J \& B: \text{there is someone who loves only } z, \text{ i.e. there is someone who}$
 loves only John and there is someone who loves only Bill.

The existence of the reading in (39b) confirms our second prediction. The scope of a scope-bearing element within the *man*-phrase can be split from the scope of the ONLY head. At the same time, it answers the question raised at the beginning of the section.

The *man*-phrase does not have to reconstruct to [Spec, ONLY-P].⁴² If it had to reconstruct, the scope splitting would not be possible, and no ambiguity would be expected in (36b). Specifically, the reading in (39b) is not available if the conjoined DP reconstructs to a position below the subject QP, either to [Spec, AgroP] or to [Spec, ONLY-P]. In those cases, the D-operator cannot be inserted since it leads to a contradiction.

2.6.3.3 Quantifiers within the *Man*-Phrase

Before closing this section, I will briefly discuss one issue that requires further attention. The only example of a scope-bearing element that we have dealt with so far is conjunction. Although conjunction is a scope-bearing element, as shown here, it is not the most representative example. So, what happens if the *man*-phrase contains a more typical QP like *every professor*? Here it seems we run into a problem. If a QP is always of type $\langle et, t \rangle$, our current entry for ONLY produces a wrong (and contradictory) reading. Consider the following sentence.

- (40) Mary-ka motun-kyoswu-man-ul mannassta.
 Mary-Nom every-professor-only-Acc met
 ‘(Lit.) Mary met only every professor.’

If *motun kyoswu* ‘every professor’ is interpreted as a QP of type $\langle et, t \rangle$, the current semantics of ONLY wrongly predicts this sentence to mean that for all x , if x is a professor, Mary met only x . This is contradictory since it is not possible for Mary to meet only Professor A and meet only Professor B at the same time. Of course, the sentence does not allow this reading.

So what does this sentence mean? In theory, we expect two readings. If the noun *kyoswu* ‘professor’ alone is in focus, we expect that all alternatives x to this noun make the sentence *Mary met every x* false. For example, *Mary met every student* should be false if

⁴² In this regard, the ONLY head is distinguished from other functional heads (e.g. NegP and C). A remaining question, then, is why this should be the case. I leave this for future investigation.

sentence (40) is true. This sentence can be true under this reading even if Mary met some students, as long as she did not meet all of them. Let's call this a weak reading. By contrast, if the whole DP *motun kyoswu* 'every professor' is in focus, we get a strong reading, which says that Mary met every professor and nobody else (see Krifka 1993 for what would be legitimate alternatives to the quantified DP). Under this reading, sentence (40) cannot be true if Mary met even a single student.

In actuality, however, this sentence does not allow both of these readings.⁴³ For all the speakers that I consulted, it can only mean that Mary met no one other than professors (the strong reading). Even when the noun receives a strong focus, speakers find the first reading very difficult to get. In order to derive the strong reading, I propose that the QP *motun kyoswu* 'every professor' can be optionally interpreted as a group-denoting term, i.e. as a definite plural like *the professors* (Beghelli & Stowell 1997, Matthewson 2001).⁴⁴ Being a group-denoting individual, the QP is an expression of type *e*, and the sentence is interpretable with our current entry of ONLY.⁴⁵ Under this proposal, sentence (40) means that Mary met a group individual that consists of all the contextually relevant professors, and for all the alternatives *X* to this group individual, Mary met none of the individuals that belong to *X*. In order to get this reading, we need to adopt a few assumptions. First, we assume that *meet* is a distributive predicate in the object position (see footnote 39). This is done by an implicit *all* or a D-operator that applies to the predicate. Applied to the example in hand, if Mary met a group

⁴³ English allows the expected ambiguity, although judgments vary among speakers. See Bonomi & Casalegno (1993) and von Stechow (1997) for conflicting judgments.

⁴⁴ A remaining question is why Korean does not allow the weak reading. One way to rule out the weak reading is to stipulate that Korean does not have an association-with-focus effect that *looks inside* QPs, and a QP is obligatorily interpreted as a group-denoting term in the context of *man*. In order for the weak reading to be possible in Korean, the DP-internal quantifier must be replaced by a floating quantifier, as in (i).

(i) Mary-ka kyoswu-tul-man-ul motwu manassta.
 Mary-Nom professor-Pl-only-Acc all met
 'Mary met every professor, and there is no other P other than 'professor' such that Mary met every P. For example, Mary met some but not all students.'

⁴⁵ I do not commit myself to the claim that QPs in Korean are always a group-denoting expression. We still allow the QP *motun kyoswu* 'every professor' to be an expression of type $\langle et, t \rangle$. In that case, sentence (40) becomes contradictory as soon as there is more than one professor. See Krifka (1993).

individual, she met **all** members of that group. Secondly, we need to assume that when negated, this implicit quantifier obeys the Excluded Middle due to the Homogeneity Presupposition (von Stechow 1997, Löbner 1998). This ensures that if Mary did not meet a certain group individual, she met **none** of the members that belong to that group. This second assumption is necessary; otherwise, we end up with the weak reading instead of the strong reading.

One argument for this position comes from English.⁴⁶ The English sentence that corresponds to (40) allows an ambiguity if the QP is headed by *every*. If the QP is headed by *each*, however, only the weak reading is available. It has been shown that in contrast to *every N*, *each N* does not allow a definite non-distributive construal (Tunstall 1998, Matthewson 2001). Since the group reading is not available for *each professor*, the strong reading is not available in *Mary met only each professor*. This supports the claim that the strong reading arises when the QP receives a group interpretation.

2.6.4 Case Marker vs. Topic/Contrastive Marker

The topic (or contrastive) marker (*n*)*un* exhibits an interesting contrast to case markers.⁴⁷ Both the topic marker and the case marker follow the particle *man*, but topic-marked *man*-phrases behave differently from case-marked ones. Specifically, the scope of a topic-marked *man*-phrase is not fixed to one position. Consider the following sentences, where the particle *man* is followed by the topic marker (*n*)*un*.⁴⁸

- | | | | | |
|------|------|--|---------------|---------------------------------|
| (41) | a. | Motun-salam-i | John-man-un | salanghanta. |
| | | every-person-Nom | John-only-Top | love |
| | | 'Everyone loves only John.' | | |
| | (i) | Everyone loves only John. | | (<i>every</i> > <i>only</i>) |
| | (ii) | *John is the only one whom everyone loves. | | (* <i>only</i> > <i>every</i>) |

⁴⁶ Thanks to Danny Fox for suggesting this test.

⁴⁷ The form *nun* is preceded by an open syllable, and *un* is preceded by a closed one.

⁴⁸ Thanks to Shinichiro Ishihara for bringing this question to my attention.

- | | | | |
|--|------------------|----------------|--------------------------------|
| b. John-man-un ₁ | [motun-salam-i | e ₁ | salanghanta.] |
| John-only-Top | every-person-Nom | | love |
| '(Lit.) Only John, everyone loves <i>e</i> .' | | | |
| (i) Everyone loves only John. | | | (<i>every</i> > <i>only</i>) |
| (ii) John is the only one whom everyone loves. | | | (<i>only</i> > <i>every</i>) |

Sentence (41a) only allows a surface scope reading. If the *man*-phrase appears S-initially, however, the sentence becomes ambiguous, as in (41b).⁴⁹ This pattern contrasts with that of a case-marked *man*-phrase, where a change in word order does not lead to a difference in scope. Given that both the topic marker and the case marker follow the particle *man*, this contrast is striking.

The answer to this puzzle lies in the fact that the marker (*n*)*un* does not have one fixed position, unlike case markers (see below for this). Crucially, it has a position higher than TP. The morpheme order *man-un* 'only-top' indicates that the ONLY head is below the head that licenses the topic marker. But this does not guarantee that the ONLY head is lower than TP since the topic head can be higher than TP in the first place. The order, then, is compatible with both positions of the ONLY head (above TP and below TP). Recall that the presence of case markers indicates that the ONLY head is lower than *Agro*, and thus lower than TP. This contrast explains why no scope-fixing effect arises in the topic-marked *man*-phrase.

Before we address the scope relation in (41) in more detail, some background is needed on the syntax and semantics of the marker (*n*)*un*. Although it is most often referred to as a topic marker, (*n*)*un* does not always function as a sentential topic. Another important function of the marker (*n*)*un* is its contrastive use (the same for Japanese *wa*). In fact, there are proposals that distinguish the two uses and assume (at least two) different topic positions for each use (See C. Han 1998, Choi 1997, M. Lee 2001,

⁴⁹ The translations given here do not fully convey the readings. Closer readings are (i) for each *x*, the only person that I know *x* loves is John, and (ii) the only person that I know everyone loves is John, respectively. There are more issues than I can discuss here regarding the exact semantic properties of the marker (*n*)*un*. Interested readers are referred to the works cited in the text.

C. Lee 2000, 2003 for Korean, and also Kuno 1973, Miyagawa 1987, 1989 for Japanese).⁵⁰ Specifically, it has been pointed out that if the topic marker appears S-medially, it is contrastive, whereas if it appears S-initially, it can be neutral or contrastive. One example is given below.

- (42) a. Mary-ka John-un salanghanta.
 Mary-Nom John-Top love
 'Mary loves John (but not the others).'⁵¹
- b. John-un₁ [Mary-ka e₁ salanghanta.]
 John-Top Mary-Nom love
 'John, Mary loves *e*.'
 (i) As for John, Mary loves him.
 (ii) Mary loves John (but not the others).

Sentence (42a) contains a contrastive topic, whereas the topic in (42b) can be a neutral or contrastive topic although its salient reading is the first one. The contrastive reading in (42b) arises if a strong pitch accent is given to *John*. Given that the contrastive reading is the only reading in (42a) and that it is still available in (42b), we conclude that the second reading in (42b) arises via scrambling. Therefore, the empty element in (42b) is a trace when it contains a contrastive topic. By contrast, when the topic in the S-initial position is a neutral topic, it is base-generated in that position, and the empty category is a *pro* (see section 2.8 for the contrast between a *pro* and a trace). For this reason, the empty category is neutrally marked as *e* in the sentence. Setting the details aside, the point of the discussion is that the marker (*n*)*un* is licensed both S-initially (TopP above

⁵⁰ Several people have claimed that TopP is located in two positions in the clausal structure, not just in Korean and Japanese, but in other languages as well. See Rizzi 1997, Cecchetto 1999, and Jayaseelan 2001 for further discussion.

⁵¹ Phrases in parentheses are meant to be a continuation rather than entailment. Also, the topic marker is not compatible with any case marker (but compatible with postpositions). Overt case marking makes the sentences ungrammatical.

TP) and S-medially (TopP below TP). The former is mapped to the neutral topic, and the latter to the contrastive topic.

Now back to the scope relation. In (41a), both ONLY-P and TopP are below TP (TP > TopP > ONLY-P). Thus, the subject QP in [Spec, TP] takes scope over the ONLY head (*every* > *only*). Given the lack of covert movement in Korean, the topic-marked *man*-phrase does not move to the higher topic position. From this it follows that (41a) is not ambiguous. The sentence in (41b) has different structures for the two readings. On the first reading, the *man*-phrase undergoes scrambling to the S-initial position. The source of the sentence is (41a), and both ONLY-P and TopP are below TP (*every* > *only*). On the second reading, both ONLY-P and TopP are above TP (TopP > ONLY-P > TP). Thus, the ONLY head takes scope over the subject QP in [Spec, TP] (*only* > *every*).⁵²

Thus the discussion in this section has confirmed the third prediction. The topic marker is the type of affix that follows the particle *man* but whose licensing head can be higher than TP (note that the presence of another licensing head below TP is not relevant here). As predicted, there is no scope fixing effect if the topic-marked *man*-phrase is scrambled. Word order change gives rise to a new scope relation. This contrast is reminiscent of the contrast between the accusative marker and postpositions. Postpositions indicate that ONLY-P is higher than VP, but they are compatible with both positions of ONLY-P (above TP and below TP). Whether a certain morpheme precedes or follows the particle *man*, what is important is how much it can narrow down possible positions of ONLY-P. Discussion in this section further supports the thesis that the morpheme order reflects the syntactic hierarchy.

⁵² Note that the account for the contrast in (41) would hold even if one rejected the low topic head. Whether one adopts the low TopP or not, we still have the high TopP. What is crucial is that TopP can be higher than TP and thus compatible with the high ONLY-P above TP. Such an assumption, however, would have difficulty in explaining the non-ambiguity of (41a) unless one adopted an LF/covert movement of the topic phrase. As already mentioned, the lack of covert movement is a general property of scope-rigid languages, and for this reason, I reject this alternative.

2.7 Implications

This section addresses implications of the present analysis on broader issues such as the syntax-morphology interface (section 2.7.1) and the contrast between lexical focus and discourse focus (section 2.7.2).

2.7.1 Implications for the Syntax-Morphology Interface

One of the main components of the proposed analysis is that the order of nominal affixes mirrors syntactic derivations. This makes a crucial role in identifying the position of the ONLY head and thus deriving the scope patterns of the *man*-phrase. To the extent that these claims are on the right track, the present study lends support to a syntactic view (rather than to a lexicalist view) of the relation between syntax and morphology.⁵³

Where the Mirror Principle applies is a long-standing debate between two camps. The lexicalists claim that words are built in the lexicon, and the Mirror Principle is just a consequence of morpheme combination (Grimshaw 1986, DiSciullo & Williams 1987, and Alsina 1999). By contrast, the syntacticists, like Baker (1985, 1988), integrate morphology into syntax and argue for a strong connection between syntax and morpheme structure. The source of controversy seems to be that discussions in this area revolve around grammatical function changing rules such as causatives, passives, and applicatives. These rules can be treated either in the lexicon or in syntax depending upon one's assumptions. The matter of quantifier scope, however, seems difficult to deal with in the lexicon. If the order of morphemes within a word has an effect beyond the word boundary, for example if it affects the scope relations as reported here, the morpheme structure should be dealt with outside the lexicon.

A specific case of this general debate is found in the Korean linguistic literature as well. The debate is regarding where the nominal affixes are added to the nominal root. One camp argues for a lexicalist approach, and claims that all the nominal affixes,

⁵³ Note that the lexicalist view discussed here is one specific version that Cho & Sells (1995) and Sells (1995) advocate. As mentioned already (footnote 22), the analysis can be made compatible with the lexicalist hypothesis assumed in the Minimalist Program (Chomsky 1993).

including case markers and focus particles, are attached in the lexicon (Cho & Sells 1995, Sells 1995). The other camp advocates a syntactic approach, and provides solutions to problems noted by the lexicalists (Yoon 1995, to appear, Koopman 2003). Given the strong association between the morphological shape of the *man*-phrase and the clausal structure assumed here, this study is in line with the syntactic approach.

Unlike the lexicalist hypothesis assumed in the Minimalist Program, the one espoused by Cho & Sells (1995) and Sells (1995) does not assume any functional head. The order of nominal and verbal affixes is due to morphological templates that merely specify a particular slot for each affix, and therefore does not have any association with syntactic hierarchy. Since the lexical view “separates what information morphemes provide from where they appear” (Sells 1995:299), it predicts that the order of affixes does not affect the syntax or semantics of sentences. Understood in connection with the issue of this chapter, this means that the position of the focus particle *man* with respect to postpositions and case markers would not affect their syntactic or semantic behavior. Specifically, the lexical view predicts that there should be no difference between *John-man-ul* ‘John-only-acc’ and *John-ekey-man* ‘John-to-only’. But the preceding sections showed that this prediction is not borne out and that the scope of the particle varies with its syntactic environment. If there is no dependency between morphology and syntax, as claimed by the lexicalists, the contrast between case-marked and postposition-marked *man*-phrases would be hard to capture and require adopting a stipulation that we rejected earlier. Thus, we conclude that the order of the nominal affixes should be the product of syntactic derivation.

Although I support the syntactic view, I also note that specific implementations of the syntactic approach can be different. One case worth mentioning is Koopman (2004), which addresses problematic cases noted by the lexicalist view (specifically Sells 1995) including the order of nominal affixes. Unlike the current approach, however, she bases her claim on the assumption that the focus head (*man*) is always merged higher than the case head (*ul*). If DP moves from its theta position through case and focus positions, this assumption leads to an unattested form **DP-Case-man*. In order to avoid this problem, Koopman (2004) argues that case markers are stranded when DP moves to [Spec, *man*] after case checking. Given that there are many issues (other than scope) that

Koopman (2004) deals with, I will not go into specific details of the analysis. However, it should be noted that the core idea that runs through her analysis and mine is the same, namely that nominal affixes are part of syntax, and that the morpheme order is not an arbitrary fact due to templates. The scope pattern of the *man*-phrase and its correlation with the morphological form add an argument for the syntactic approach.

2.7.2 Lexical Focus vs. Discourse Focus

The second issue to address is whether the ONLY head can be identified with the focus head that is assumed in the focus literature (e.g. Choe 1995, Rizzi 1997), and whether the approach to the exclusive particle can be extended to other focus particles.

In the literature, the focus head is usually posited to represent discourse focus, which normally expresses new information in contrast to given information. Given that the ONLY head carries a very specific meaning, namely exhaustivity, it may be distinct from this focus head. However, it is also noted that the focus head is associated with exhaustivity in some cases. Kiss (1998), following Brody (1990, 1995), posits such a focus head to represent identificational focus in Hungarian. Another difference between the ONLY head and the focus head assumed in the literature is that the focus head has a designated position in the clause, usually in a higher domain such as CP. By contrast, the ONLY head proposed here does not have one fixed position. It can occur not just in a higher domain but also in a lower domain such as below TP. This difference, however, seems to be weakened by recent proposals which argue that the focus head does not just belong to the CP domain. They argue that there is at least one more focus projection in the lower domain, for example, above VP (Miyagawa 1997, Jayaseelan 2001, Belletti 2001, Simpson & Wu 2002, and Drubig 2003). If these proposals are on the right track and thus FocP is freer in its distribution than has been assumed so far, the ONLY head may be identified with the focus head in these works, at least in its distribution. Of course, there could be differences that arise due to their different nature, for example, the presence or absence of a lexical item involved. At this point, I do not take any stand regarding the relation between lexical focus and discourse focus, and leave this for future research.

The second issue is whether the analysis of the exclusive particle can be extended to other focus particles, for instance, to the additive particle *to* in Korean. Ideally, the additive particle would behave in the same way as the exclusive particle. This issue will be addressed in more detail in the following chapter, and here I briefly introduce some differences between the two particles.

Hasegawa (1994) and Sohn (1995) propose that focus phrases move to [Spec, FocP], which is located between CP and NegP. Their arguments are based on the behavior of Japanese *mo* 'also' and Korean *to* 'also', both of which always have scope over negation as a Positive Polarity Item (PPI). The following data is from Sohn (1995).

- (43) Mary-ka John-to mannaci ani hayssta.
 Mary-Nom John-also meet not did
 (i) Mary didn't meet John, either. (*also* > *Neg*)
 (ii) *Mary didn't meet John, although he met someone else. (**Neg* > *also*)

Following Hasegawa (1994), Sohn (1995) argues that FocP is higher than NegP since the *to*-phrase (the phrase which the particle is attached to) always takes scope over negation. He further assumes that all focus particles move to the spec of FocP in the overt syntax, which leads to an expectation that the *man*-phrase would also always take scope over negation. This expectation, however, is not fulfilled.

- (44) Mary-ka John-man mannaci ani hayssta.
 Mary-Nom John-only meet not did
 (i) John is the only one that Mary didn't meet. (*only* > *Neg*)
 (ii) It is not the case that Mary met only John. She met someone else, too. (*Neg* > *only*)

Unlike (43), (44) is ambiguous. The *man*-phrase can take either wide or narrow scope with respect to negation, as also observed by J.-W. Choe (1998). Given this contrast, it seems difficult to make a claim about focus particles in general based on the behavior of one particle. Also, the PPI status of the particle *to* is an issue independent of whether the

syntax of the two particles is distinguished. Thus, we cannot tell whether their syntax is really distinguished. More will be said on this issue in the next chapter.

2.8 Extension: *Man*-Phrases with No Additional Marking

So far I have shown that the scopal behavior of a *man*-phrase varies with the accompanying affixes (case marker, postposition, or topic marker). This section presents another case where the morphological marking affects the scopal behavior of a *man*-phrase, specifically a *man*-phrase with no additional marking. The particle *man* can combine with a DP without other morphemes, in which case it exhibits different syntax and semantics from case-marked and postposition-marked *man*-phrases. The discussion starts with the scope pattern (section 2.8.1), and then turns to syntactic differences due to the morphological marking (section 2.8.2). The final subsection (section 2.8.3) touches upon why there is a correlation between morphological marking and syntax.

2.8.1 Scope Patterns

When there is a *man*-phrase with no overt case marking (henceforth bare *man*-phrase), the S-initial appearance of the *man*-phrase always allows an ambiguity with respect to a following scope-bearing element. The dependency between the *man*-phrase and the empty element associated with it can be clause-internal or extend across a clausal boundary. Let us first consider the clause-internal dependency given in (45).

- (45) a. John-**man**₁ [motun-salam-i e₁ salanghanta.]
 John-only every-person-Nom love
 ‘(Lit.) Only John, everyone loves *e*.’
 (i) Everyone loves John and no one else. (*every* > *only*)
 (ii) John is the only one whom everyone loves. (*only* > *every*)

- b. John-man-ul₁ [motun-salam-i t₁ salanghanta.]
 John-only-Acc every-person-Nom love
 '(Lit.) Only John, everyone loves *t*.'
- (i) Everyone loves John and no one else. (*every* > *only*)
 (ii) *John is the only one whom everyone loves. (**only* > *every*)

Sentence (45a) is ambiguous. Unlike (45b), it can mean that John is the only one whom everyone loves. While the non-ambiguity of (45b) is puzzling under the QP approach to *man*-phrases, the ambiguity of (45a) is puzzling under the present account. Let's suppose that (45a) is a result of case drop from (45b), and further that case drop is a PF phenomenon and does not affect LF operations such as scope relation. Under these assumptions, *John-man* 'John-only' would be a realization of *John-man-ul* 'John-only-acc,' and ONLY-P would be positioned in the same place in both sentences. This approach, then, wrongly predicts (45a) to be unambiguous like (45b), contrary to fact. This suggests that *John-man* cannot be always identified as *John-man-Case*, and its S-initial appearance cannot be due to scrambling, as in (45b). For this reason, we conclude that case drop and scrambling do not give a proper account for the contrast.⁵⁴ For the same reason, the empty element in (45a) is marked as *e*, which is neutral regarding the type of the empty category, whereas the empty category in (45b) is a trace (*t*) of a movement, namely scrambling.

The same problem holds of (46), where the dependency between the *man*-phrase and the empty element goes across a clausal boundary.

- (46) a. John-man₁ nwukwunka-ka [Mary-ka e₁ pinanhayssta-ko] malhayssta.
 John-only someone-Nom Mary-Nom criticized-that said
 '(Lit.) Only John, someone said that Mary criticized *e*.'
- (i) Someone said that Mary criticized only John. (*some* > *only*)
 (ii) Only about John did someone say that Mary criticized him. (*only* > *some*)

⁵⁴ I thank Shoichi Takahashi for discussion on this part.

- '(Lit.) Only John, someone said that Mary criticized *t*.'

The case in (46b) is easily accounted for. The case-marked *man*-phrase behaves in the same way whether it undergoes clause-internal or long-distance scrambling. Thus the account for the former is straightforwardly extended to the latter. In (46b), the ONLY head is positioned within the embedded clause, as inferred from the morpheme order, and the *man*-phrase undergoes long-distance scrambling after focus movement within the embedded clause. Similarly to the case in (45), the contrast between (46a) and (46b) would not be captured, if the two have identical structures and one is derived from the other via case drop.

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case drop. The bare *man*-phrase neither behaves like a case-marked *man*-phrase nor a postposition-marked *man*-phrase with respect to scope and reconstruction.

2.8.2 Another Alternative Account Rejected

Despite these problems, one might think that there is a way for the scrambling analysis to work here. This alternative approach appeals to the idea that case markers in Korean are actually focus markers (e.g. Schütze 2001).⁵⁵ If we look at the data from this angle, it seems that the scrambling analysis can derive the scope patterns. Under this hypothesis, the *man*-phrase is a QP, and the ambiguity in (45a) and (46a) is due to scrambling of a QP. The reconstruction effect in (45b) and (46b) is instead attributed to the fact that the case marker is a focus marker. The focus marker needs to be licensed in the focus position, which is around the case head. Although it seems attractive at first sight, this approach runs into several problems. First of all, the ambiguity of (46a) is a crucial argument against this view. It has long been noticed that long-distance scrambled QPs obligatorily reconstruct to their base position, unlike QPs that are scrambled clause-internally (Tada 1993, Sohn 1995).⁵⁶ This means that long-distance scrambling of a QP does not induce an ambiguity. The examples in (47) illustrate this point.

- (47) a. Nwukwunka-ka [Mary-ka motun-salam-ul pinanhayssta-ko] malhayssta.
 someone-Nom Mary-Nom every-person-Acc criticized-that said
 ‘Someone said that Mary criticized everyone.’
 (i) Someone said that Mary criticized everyone. (some > every)
 (ii) *For every x, someone said that Mary criticized x. (*every > some)

⁵⁵ This alternative was suggested to me by Minjoo Kim and Dong-Whee Yang.

⁵⁶ Under the position that scrambling of QPs is overt QR (Sohn 1995, Miyagawa 2003), the fact that long-distance scrambled QPs obligatorily reconstruct is covered by the generalization that QR is clause-bound (but see also May 1988, Reinhart 1995, Fox 2000 for a different opinion about the clause-boundedness of QR). The answer, however, is not complete in that we do not understand why QR should be clause-bound. Tada (1993), for example, argues that the position created by long-distance scrambling is an illegitimate LF object, and thus the long-distance scrambling must be undone. Yet this seems to be a different way of describing the facts.

- b. **Motun-salam-ul_i nwukwunka-ka** [Mary-ka t_i pipanhayssta-ko] malhayssta.
 every-person-Acc someone-Nom Mary-Nom criticized-that said
 ‘(Lit.) Everyone, someone said that Mary criticized *t*.’
- (i) Someone said that Mary criticized everyone. (some > every)
 (ii) *For every *x*, someone said that Mary criticized *x*. (*every > some)

These examples show that unlike clause-internal scrambling, long-distance scrambling of a QP does not change scope relations. In (47a), the subject QP takes scope over the object QP in the embedded clause. In (47b), where the object QP is scrambled across the subject QP, the scope relation remains the same. Neither sentence can convey that for each person, there is someone who said that Mary criticized him or her. In light of this, the S-initial appearance of the *man*-phrase in (46a) cannot be due to scrambling of a QP. If it were, there ought to be no difference between (46a) and (47b).

This approach would also assume the same syntax for a bare *man*-phrase and a postposition-marked *man*-phrase, given that both allow ambiguity in clause-internal scrambling. This leads to an expectation that they should behave in the same way in long-distance scrambling. This expectation, however, is not fulfilled.

- (48) a. **Nwukwunka-ka** [Mary-ka John-hako-man akswuhayssta-ko] malhayssta.
 someone-Nom Mary-N John-with-only shook_hands-C said
 ‘Someone said that Mary shook hands only with John.’
- (i) Someone said that Mary shook hands only with John. (some > only)
 (ii) *Only about John did someone say that Mary shook hands with him. (*only > some)
- b. **John-hako-man_i nwukwunka-ka** [Mary-ka t_i akswuhayssta-ko] malhayssta.
 John-with-only someone-Nom Mary-N shook_hands-C said
 ‘(Lit.) Only with John, someone said that Mary shook hands with *t*.’
- (i) Someone said that Mary shook hands only with John. (some > only)
 (ii) * Only about John did someone say that Mary shook hands with him. (*only > some)

Although the postposition marked *man*-phrase induces an ambiguity in clause-internal movement (sections 2.3 and 2.5), it does not do so in long-distance movement. Both (48a) and (48b) are unambiguous. The existential QP in the matrix clause takes scope over the *man*-phrase, i.e. the ONLY head.⁵⁷ Contrast (48b) with (46a), which shows that the bare *man*-phrase behaves differently from the postposition-marked *man*-phrase. This contrast again confirms that we cannot derive the scope pattern of bare *man*-phrases via scrambling. Ample evidence suggests that scrambling is not the right way to account for the ambiguity due to the bare *man*-phrase.

2.8.3 Syntax of *Man*-Phrases: Base-Generation vs. Movement

This section proposes an analysis of the bare *man*-phrase which will account for the scope pattern noted in the previous section. On the basis of syntactic tests like resumption and island constraints, I argue that a bare *man*-phrase in S-initial position is base-generated in that position, whereas both case-marked and postposition-marked *man*-phrases in the same position are derived by movement. The distinction between these two mechanisms receives further support from the existing literature, which also argues for such a distinction based on case marking (Saito 1985, Hoji 1987, Fukaya & Hoji 2000). The analysis here focuses on the case in (45), repeated below as (49), but the account is easily extended to the long-distance dependency case in (46).

- (49) a. John-*man*₁ [motun-salam-i e₁ salanghanta.]
 John-only every-person-Nom love
 ‘(Lit.) Only John, everyone loves *e*.’
 (i) Everyone loves John and no one else. (*every* > *only*)
 (ii) John is the only one whom everyone loves. (*only* > *every*)

⁵⁷ The non-ambiguity of (48b) actually shows that focus movement (movement of DP to [Spec, ONLY-P]) is clause-bound. If this were not the case, the PP could have moved to the spec position of the matrix clause, and the sentence would have the unattested reading. In this way, focus movement is similar to QR in that both are clause-bound.

- b. John-man-ul₁ [motun-salam-i t₁ salanghanta.]
 John-only-Acc every-person-Nom love
 ‘(Lit.) Only John, everyone loves *t*.’
 (i) Everyone loves John and no one else. (*every* > *only*)
 (ii) *John is the only one whom everyone loves. (**only* > *every*)

How is the ambiguity of (49a) explained? I claim that the ambiguity is due to two structures. The first reading of (49a) is easy to derive. We simply assume that case marking is covert there. Under our assumption that *John-man* can be a realization of *John-man-Case* or *John-Case-man* (see section 2.5.1), ONLY-P here is either below AgroP, as in (49b), or right above AgroP. In either case, ONLY-P is below TP, whose spec is occupied by the universal quantifier. The *man*-phrase undergoes scrambling to the S-initial position. However, this is not the only structure available for this sentence. The second reading of (49b) is derived from another structure. Given the scope relation here (*only* > *every*), the ONLY head must be positioned above TP. Recall that ONLY-P can appear anywhere in the clausal structure, and we identified ONLY-P above TP and below TP. Here I propose that DP is base-generated in the spec of the high ONLY-P, which is above TP (arguments for this claim follow shortly). The scope relation follows from this configuration. I also argue that the empty element in the object position is a *pro* rather than a trace, given that there is no movement involved. The structure of (49a) under the second reading would be like (50) below.

(50) [ONLY-P John₁ [TP everyone λx [VP *x* *pro*₁ love] T] ONLY]

Through abstraction on the pronoun (*pro*), the TP is interpreted as a property.⁵⁸ The whole sentence leads to the reading we want: John is the only individual who has the property of being loved by everyone. One might point out that the Case Filter is not

⁵⁸ This is what is implicitly assumed in the literature in interpreting sentences containing *pro*, and I cannot be more explicit than this about how it works. See Cecchetto & Chierchia (1999) for the interpretational mechanism for Clitic Left Dislocation (CLLD) and Heycock & Doron (2003) for that of Broad Subject Construction. See also Cinque (1990) and Iatridou (1995) for the base-generation analysis for the CLLD.

satisfied with the DP in [Spec, ONLY-P]. This problem goes away if we assume that the Case Filter applies to DPs in argument positions and that the spec of the ONLY head is not an A-position. I also assume that the Accusative case is assigned to the empty element (*pro*), assuming that *pro* is licensed by case marking (Rizzi 1986).

Now let's turn to arguments for the base-generation structure. The first argument comes from the resumption test. The bare *man*-phrase allows a resumptive pronoun in the position of the gap, whereas case-marked and postposition-marked *man*-phrases do not, as illustrated below.

- (51) a. John₁-**man** [motun-salam-i ku₁-lul salanghanta.]
 John-only every-person-Nom he-Acc love
 '(Lit.) Only John, everyone loves him.'
 (i) *Everyone loves John and no one else. (**every* > *only*)
 (ii) John is the only one whom everyone loves. (*only* > *every*)
- b. *John₁-**man-ul** [motun-salam-i ku₁-lul salanghanta.]
 John-only-Acc every-person-Nom he-Acc love
 '(Lit.) Only John, everyone loves him.'
- c. *John₁-**hako-man** [motun-salam-i ku₁-hako akswuhayssta.]
 John-with-only every-person-Nom he-with shook_hands
 '(Lit.) Only with John, everyone shook hands with him.'

When the *man*-phrase does not have any marking, the gap can be replaced with an overt pronoun, as in (51a). By contrast, when it is marked by a case-marker or a postposition, replacement of the gap with an overt pronoun leads to ungrammaticality, as shown in (51b-c). This contrast shows the different nature of the empty elements in the two cases. The empty element in (51a) – before resumption takes place – is a *pro* and compatible with resumption, whereas those in (51b-c) are a trace of scrambling or focus movement, and not compatible with resumption. Also note that resumption disambiguates an

otherwise ambiguous sentence. Once the gap is replaced with an overt pronoun, (51a) is no longer ambiguous.

Another argument for the base-generation structure comes from cases where a bare *man*-phrase is followed by a full sentence. In those cases, the sentence following the *man*-phrase does not contain a gap from which the *man*-phrase is extracted. For these cases, it is difficult to argue for the existence of movement. Similar kinds of arguments have been presented for other base-generation structures (Saito 1985, Yoon 2004 among others). Examples are given below.

- (52) a. **Yenghwa-man** [TP mikwuk-ket-i caymi-issta.]
 movie-only America-thing-Nom fun-be
 ‘Only for movies are American ones fun.’
 (For other things, e.g. novels, American ones are not fun.)
- b. **Enehak-man** [TP chwicik-i elyepta.]
 linguistics-only employment-Nom difficult
 ‘Only for linguistics is getting a job in it difficult.’
 (For other fields, getting a job is not difficult.)

Note that although there is no syntactic movement, we need to assume that some kind of predicate abstraction takes place in these sentences. This will allow the bracketed TP to be interpreted as a property; otherwise it leads to an uninterpretable structure. This property becomes the predicate argument of the ONLY head.⁵⁹

⁵⁹ The same pattern is attested for the topic marker (*n*)*un* and the additive particle *to* ‘also’.

- (i) **Yenghwa-nun** [mikwuk-ket-i caymi-issta.]
 movie-Top America-thing-Nom fun-be
 ‘As for movies, American ones are fun.’
- (ii) **Yenghwa-to** [mikwuk-ket-i caymi-issta.]
 movie-also America-thing-Nom fun-be
 ‘Also for movies (in addition to something else, e.g. novels), American ones are fun.’

Lastly, a bare *man*-phrase in the sentence-initial position is not subject to island constraints. This further confirms that we are not dealing with a movement structure, but a base-generation structure. The following examples illustrate Complex NP and Adjunct Islands.

- (53) a. W&P-*man*₁ Mary-ka [e₁ ilk-un salam-ul] chass-ulswuiss-ess-ta.
 W&P-only Mary-Nom read-Rel person-Acc find-can-Past-Decl
 ‘(Lit.) Only *War and Peace*, Mary could find a person who read *e*.’
 (i) *War and Peace* is the only *x* such that Mary could find a person who read *x*.
 (ii) *Mary could find a person who read only *War and Peace*.
- b. John-*man*₁ [Mary-ka e₁ chwuchenhayss-ulttay] motun-salam-i chansenghayssta.
 John-only Mary-N nominated-when every-person-N agreed
 ‘(Lit.) Only John, when Mary nominated *e*, everyone approved of it.’
 (i) John is the only *x* such that when Mary nominated *x*, everyone approved of it.
 (ii) When Mary nominated only John, everyone approved of it.
 (i.e. When Mary nominate John and someone else as well, some disapproved of it.)

In (53a), the empty element is positioned within a relative clause. The *man*-phrase takes scope over the whole sentence, not just over the relative clause. The second reading is not available since it implies a violation of island constraints on scrambling. Similarly in (53b), the *man*-phrase can take scope over the whole sentence, not just over the adjunct clause. It can also take scope within the adjunct clause, which is due to scrambling of the *man*-phrase within the adjunct clause. In both (53a) and (53b), the *man*-phrase associates with an empty element (*pro*) – which can be replaced by an overt pronoun – within an island. This would not be possible if the dependency were due to a movement strategy.

The island insensitivity in (53) disappears once the *man*-phrase contains a case marker or a postposition. The sentences become ungrammatical, as shown below.

- (54) *W&P-man-ul₁ Mary-ka [t₁ ilk-un salam-ul] chass-ulswuiss-ess-ta.
W&P-only-Acc Mary-Nom read-Rel person-Acc find-can-Past-Decl
‘(Lit.) Only *War and Peace*, Mary could find a person who read *t*.’
- (55) a. Mary-ka [John-i Sumi-ekey-man malhaycwu-n pimil]-ul alkoissta.
Mary-Nom John-N Sumi-to-only tell-Rel secret-Acc know
‘Mary knows the secret that John told only to Sumi.’
- b. *Sumi-ekey-man₁ Mary-ka [John-i t₁ malhaycwun-n pimil]-ul alkoissta.
Sumi-to-only Mary-N John-Nom tell-Rel secret-Acc know
‘(Lit.) Only to Sumi, Mary knows the secret that John told *t*.’
(i) *Mary knows the secret that John told only to Sumi.
(ii) *Sumi is the only person *x* s.t. Mary knows the secret that John told to *x*.
- (56) a. [Mary-ka John-hako-man akswuhayss-ulttay] motun-salam-i nolassta.
Mary-N John-with-only shook_hands-when every-person-N was_surprised
‘When Mary shook hands only with John, everyone was surprised.’
- b. John-hako-man₁ [Mary-ka t₁ akswuhayss-ulttay] motun-salam-i nolassta.
John-with-only Mary-N shook_hands-when every-person-N was_surprised.
‘(Lit.) Only with John, when Mary shook hands *t*, everyone was surprised.’
(i) When Mary shook hands only with John, everyone was surprised.
(ii) *John is the only *x* s.t. everyone was surprised when Mary shook hands with *x*.
(Mary shook hands with other people as well, but not everyone was surprised at those.)

Sentence (54) is bad because scrambling is subject to island constraints (Saito 1985). Sentences (55)-(56) show that focus movement is also subject to island constraints – Complex NP and Adjunct Islands respectively. In particular, the ungrammaticality of (55b) and (56b) in the second reading is a clear contrast to the grammaticality of (53a-b).

Let me explain a bit about (55b) and (56b). The two readings that we need to consider for (55b) are based on the fact that the S-initial appearance of the *man*-phrase

can be due to scrambling or focus movement. In the first reading, the *man*-phrase has been scrambled, and the sentence retains the same reading as (55a). The sentence is not grammatical under this reading since scrambling is subject to island conditions. In the second reading, the PP has undergone focus movement. The PP has moved from the complex NP to a [Spec, ONLY-P] that is higher than the matrix TP. The sentence is ungrammatical, which shows that focus movement is subject to the Complex NP Island. Analogously, the S-initial appearance of *Johhn-hako-man* in (56b) may be due to scrambling or focus movement. However, the sentence is grammatical only under the scrambling structure, where the *man*-phrase is scrambled within the adjunct clause. The second reading is not available, since PPs cannot move from an island to [Spec, ONLY-P] in the matrix clause.

To summarize, the S-initial appearance of the *man*-phrase can be due to base-generation as well as to movement (scrambling and focus movement). If the *man*-phrase is bare, it could be either scrambling or base-generation. If the *man*-phrase is overtly case-marked, it is an obvious instance of scrambling. Lastly, if there is a postposition, the process can be either scrambling or focus movement. I have shown that the syntax of the base-generation structure is distinct from that of the movement structure, whether it is scrambling or focus movement.⁶⁰

2.8.4 A Remaining Question

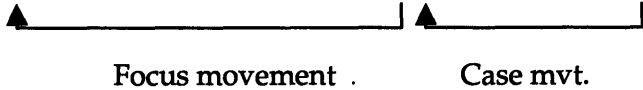
As for the distinction made in the previous section, one question remains.⁶¹ Why is it that the bare *man*-phrase is base-generated in the sentence initial position? Why is the movement structure ruled out for the bare *man*-phrase, if the high ONLY-P allows movement structure for PP? Similarly, why is base-generation not allowed for case-marked and postposition-marked *man*-phrases when they appear at S-initial positions? This section provides possible but speculative answers for these questions.

⁶⁰ There might be more arguments that will distinguish movement and base-generation structures such as WCO and Condition C violations. I leave them for future investigation.

⁶¹ I thank Shigeru Miyagawa and Alec Marantz for bringing up this issue.

As for the first question, we can say that the bare *man*-phrase in the S-initial position could be generated by movement as well as by base-generation, unless the gap is positioned in an island or the gap is replaced by an overt pronoun. If this is possible, the second reading of (57), repeated from (49a), would have the movement structure given in (58b) in addition to the base-generation structure in (58a), repeated from (50).

- (57) John-*man*_i [motun-salam-i e₁ salanghanta.]
 John-only every-person-Nom love
 ‘(Lit.) Only John, everyone loves *e*.’
 (i) Everyone loves John and no one else. (*every* > *only*)
 (ii) John is the only one whom everyone loves. (*only* > *every*)

- (58) a. [ONLY-P John_i [TP everyone λx [VP *x* *pro*_i love] T] ONLY]
 b. [ONLY-P John [λz [TP everyone λx [AGRO-P *z* λy [VP *x* loves *y*] AGRO₀] T] ONLY]


The derivation in (58b) leads to the form *DP-Case-man*, which will be spelled out as *DP-man* without the overt case marker. Given that this condition on case realization is needed anyway (section 2.5.1), movement structure seems to be a possible option. When there is an island between the ONLY head and the empty element, or the gap is replaced by a resumptive pronoun, the movement structure is ruled out and base-generation becomes the only option.

The second question is why base-generation is not allowed in case-marked and postposition-marked *man*-phrases when they occur sentence-initially. If this were the case, the empty element in those cases could be a *pro* instead of a trace. I believe that this is due to the assumption that morphological marking (both case markers and postpositions) is only possible in certain positions, specifically in the lower domain. I assume that accusative case is available only in [Spec, AGRO-P], and postpositions are generated only within VP. Therefore, the presence of these morphemes in an S-initial

man-phrase indicates that they do not originate in that position but have gotten there via some kind of movement operation. Furthermore, if a *pro* appeared in the position of the gap, it would not be licensed, given that relevant cases are already assigned to the DPs in the S-initial position. The empty element must be a trace, then.

This position, however, cannot be the whole story, given some cross-linguistic differences. In some languages, expressions that are base-generated in non-argument positions still carry case morphemes. Clitic Left Dislocation (CLLD) in Romance languages is such a case.⁶² If we stick to the assumption that case assignment is limited to certain syntactic positions, these cases will have to be analyzed as some kind of concord phenomenon. The case marking is present in dislocated positions, but it is only agreeing with *pro* in the clause, which is involved with real case assigning/checking. Since an answer to this question is independent of the facts discussed here, we do not go into further details.

2.9 Miscellaneous Issues

This section addresses a few issues raised by the proposed analysis including occurrence of the particle within DP and PP (section 2.9.1), binding properties of the *man*-phrase (section 2.9.2), the contrast between nominative and accusative marked *man*-phrases (section 2.9.3), and the particle attached to the embedded clause (section 2.9.4).

2.9.1 The Particle within DP and PP

It has been mentioned several times that the particle *man* must follow postpositions. I have argued that this distribution follows from the assumption that the ONLY head is positioned above VP, where PP is generated. The Mirror Principle and the head-final nature of Korean dictate that postpositions precede the particle *man*. Given this understanding, the appearance of the particle *man* within DP and PP seems problematic.

⁶² I thank Sabine Iatridou for pointing this out to me.

This section shows that these apparently problematic cases receive the same account. We first start with the particle within PP, and then proceed to the case of DP-internal *man*.

The postposition (*u*)*lo* ‘with’, which marks Instrumental, can either precede or follow the focus particle, as also noted by Yoon (to appear).⁶³

- (59) a. Ku-kot-e-nun cacenke-lo-man ka-lsuissta.
 that-place-to-Top bicycle-with-only go-be able to
 ‘One can get there only on a bicycle (no other means are allowed).’
- b. Ku-kot-e-nun cacenke-man-ulo ka-lsuissta.
 that-place-to-Top bicycle-only-with go-be able to
 ‘One can get there with only a bicycle (no other means are needed).’

The order in (59a) conforms to the pattern of other postpositions, but that in (59b) is the opposite of the general pattern but still grammatical. For this reason, the case in (59b) has been treated as an exception or as a single item. Notice, however, that the two sentences are distinct in their meanings, and the scope of the ONLY head is different. In (59a), the particle has a sentential scope, whereas in (59b) the scope is just PP-internal.⁶⁴ Since the first case is already explained above, let’s focus on the second case.

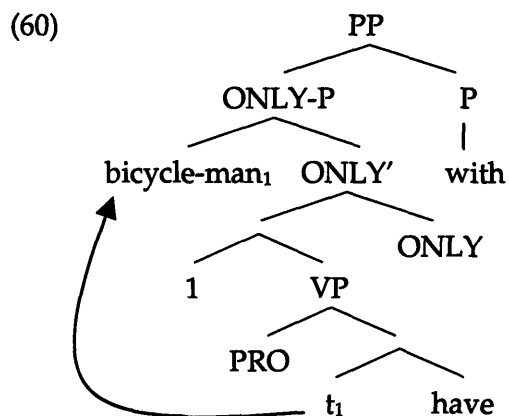
⁶³ A similar (though not exactly the identical) pattern is found in Japanese. See Harada & Noguchi (1992) and Hayashishita (2003) for further discussion.

⁶⁴ The contrast in (59) is parallel to the following example in English noted in Liberman (1974).

- (i) With no job would John be happy.
 (ii) With no job, John would be happy.

The two sentences are distinguished by the scope of negation. Sentence (i) says that there is no job such that if John had it, he would be happy. Sentence (ii), by contrast, says that if there were no job that John had, i.e. if John were unemployed, he would be happy. In (i) the negation takes scope over the whole sentence, whereas in (ii) it takes scope only within the PP. This difference is reflected in the fact that Subject-Auxiliary Inversion occurs only in the first case. I assume that the analysis of (59b) can be extended to (ii). I thank Irene Heim and David Pesetsky for bringing this parallelism to my attention.

For the sentence in (59b), I claim that the PP *cacenke-man-ulo* 'bicycle-only-with' contains a clausal structure. There is an implicit predicate within this PP, and the ONLY head takes this predicate as its argument. The structure is as follows.



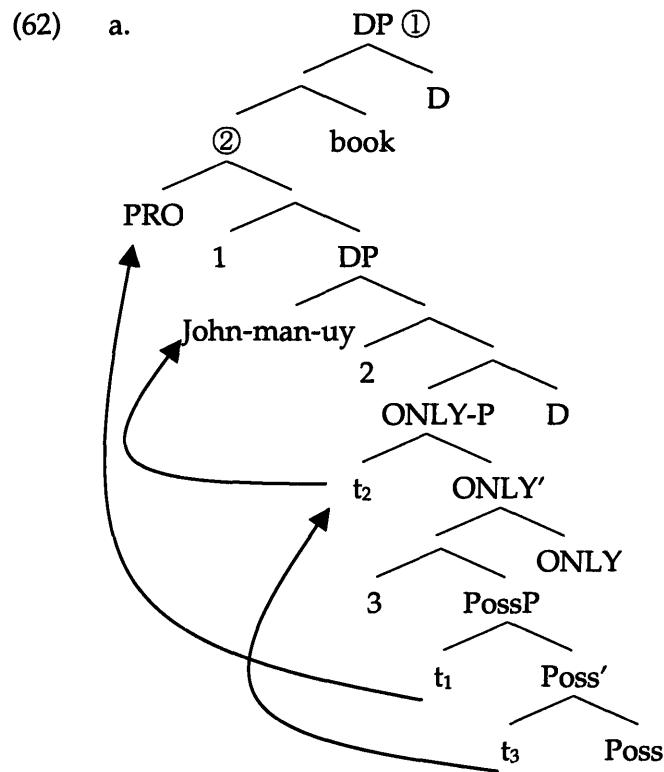
I assume that the VP contains PRO in the subject position, which is of type *e* and controlled by the matrix subject. I also assume that the implicit predicate is *have*, although this is not the only possibility. In the given example, one does not have to own a bicycle as long as he can use one to get there. If we interpreted the postposition as heading an adjunct clause, the tree would be interpreted as 'if/when one has only a bicycle,' for example; this is what the PP in (59b) means. It is crucial that this reading does not exclude the possibility of getting there by other means. In fact, it implies that one can get there with other means as well. In this structure, the DP *cacenke* 'bicycle' moves to [Spec, ONLY-P]. Since the ONLY head is lower than the postposition, the expected order is *man-ulo* 'only-with', which is the case.⁶⁵

⁶⁵ One remaining question is why the postposition *ulo* 'with' is the only postposition that allows ONLY-P within its projection. Why is it not possible with other postpositions, e.g. locatives, given that covert subjects are posited in PPs in general? (See Stowell 1983 and Heim & Kratzer (1998: Ch.8) for subjects within PP and NP.) Irene Heim suggests that ONLY-P may be ruled out within other PPs for semantic reasons. If a PP is an argument of a verb, the postposition has no meaning of its own. The postposition is a kind of a case marker and thus cannot have a predicate in it. Or If the postposition imposes some semantic condition, this might rule out ONLY-P within its projection. For instance, locatives have a uniqueness condition since one cannot be in more than one place at the same time. Thus ONLY-P within a locative would not give a sensible meaning.

Now we move on to the occurrence of the particle *man* within DP. The genitive marker *uy*, like other case markers, must follow the particle *man*, as illustrated below.

- (61) John-man-uy chayk
 John-only-Gen book
 ‘Only John’s book, i.e. the book that only John owns’

Under the proposed theory, the ordering between the particle and the genitive case marker indicates that the ONLY head is positioned lower than the genitive head, which I assume to be D. Adopting the structure of possessive DPs proposed in Cho (2002) and Larson & Cho (2003), the structure of (61) is represented as (62a), with the semantic value of the top node shown in (62b). See the appendix for a detailed derivation.



- b. $\llbracket \textcircled{1} \rrbracket$ = The unique x such that x is a book & John possesses x & $\forall z_e \in \text{ALT}(\text{John})$:
 z possesses $x \rightarrow z = \text{John}$, i.e. the book that only John possesses.

Cho (2002) and Larson & Cho (2003) propose a structure of the possessive DP that is parallel to that of the possessive clause. The possessor is in the complement of the Poss head and the possessee is in [Spec, PossP]; and the Poss head denotes $[\lambda x. \lambda y. x \text{ possesses } y]$.⁶⁶ Such an entry for the Poss head correctly derives the desired reading. Simply put, node ② denotes the set of things that only John possesses. The PRO that moved from [Spec, PossP] is semantically vacuous (Heim & Kratzer 1998: Ch.8).⁶⁷ Node ② combines with the noun *book* via Predicate Modification. Following the view that possessive nominals are definite descriptions (Barwise and Cooper 1981), I assume that the D head is an abstract definite determiner (*THE*), i.e. an element of type $\langle et, e \rangle$ as in the Fregean analysis of the definite determiner. The possessor undergoes focus movement to [Spec, ONLY-P], and then moves to [Spec, DP] for Case assignment/checking. This derivation leads to the form *John-man-uy* 'John-only-gen'. Unlike the D head at the top node, I assume that the D head responsible for Case does not carry the semantic force of the definite determiner.

This section has offered an account of the particle's occurrence within DP and PP. I have shown that these cases are also covered by our general claim that the order of nominal affixes reflects the syntactic hierarchy. Given these analyses, one might raise suspicions about positing a focus head and focus movement within DP and PP. I note that these are unfamiliar, but not unattested. Aissen (1996) argues for focus movement within DP and PP in Tzotzil, and thus for the existence of FocP within DP and PP. Simpson & Wu (2002) also present a structure where the D head optionally selects a focus projection. I conclude that focus movement does occur within DP and PP.

2.9.2 Nominative vs. Accusative Marking

One of the main claims of this chapter is that case markers help detect the position of the ONLY head thanks to the Mirror Principle. If you take a close look at the data provided

⁶⁶ Cho (2002) and Larson & Cho (2003) assume a PP (headed by *to*) instead of PossP. But this change from PP to PossP is trivial, and does not affect the analysis presented here.

⁶⁷ It is not necessary to posit PRO in [Spec, PossP]. One alternative is to put the possessee within PossP and move it later to a higher position for the semantic computation, as is often assumed in the analysis of head-internal relative clauses.

so far, you may notice that all the case markers have been accusative rather than nominative. There is a reason for this asymmetry, and this section discusses why this has to be the case. First, consider the following sentences, in which the *man*-phrase is marked as nominative.

- (63) a. Mary-**man-i** **motun-salam-ul** salanghanta.
 Mary-only-Nom every-person-Acc love
 ‘Only Mary loves everyone.’
 (i) Mary is the only one who loves everyone. (*only* > *every*)
 (ii) *For each person x, only Mary loves x. (**every* > *only*)
- b. **Motun-salam-ul₁** [Mary-**man-i** t₁ salanghanta.]
 every-person-Acc Mary-only-Nom love
 ‘(Lit.) Everyone, only Mary loves t.’
 (i) Mary is the only one who loves everyone. (*only* > *every*)
 (ii) For each person x, only Mary loves x. (*every* > *only*)

Sentence (63a) is not ambiguous. The only reading available is that Mary is the only one who loves everyone. Sentence (63b), by contrast, is ambiguous and allows another reading by which for each person, Mary is the only one who loves him or her.

On a cursory look, the ambiguity in (63b) may seem problematic. When the *man*-phrase is marked as accusative, scrambling does not change scope relations. Here the *man*-phrase is marked as nominative, and scrambling affects scope relations. Notice, however, that the ambiguity in (63b) is due to scrambling of *motun-salam* ‘everyone’ rather than the *man*-phrase. Given that scrambled QPs can optionally reconstruct and induce an ambiguity, all the readings of (63) follow from the current proposal. In (63a), ONLY-P is right below TP, as indicated by the morpheme order. Thus, it takes scope over the object QP, which I assume to be in [Spec, AgroP]. In (63b), ONLY-P is still below TP, but the scrambled QP is higher than ONLY-P, since it is adjoined above TP. If the QP is interpreted in the trace position via reconstruction, we get the first reading, whereas if it is interpreted in the scrambled position, we get the second reading.

Therefore, the case in (63) does not tell us whether the nominative marker plays the same role as the accusative marker. In order to prove this, we need to show that the subject *man*-phrase does not induce an ambiguity when scrambled clause-internally. Long-distance scrambling is not enough as evidence since focus movement is clause-bound anyway. The task may not be possible to begin with, given that subjects are assumed not to undergo scrambling (Saito 1985). However, some recent work argues for subject scrambling (Sohn 1995 and Ko 2004), and here I will assume that it is possible. In order for the *man*-phrase to scramble, we need a scope-bearing element that precedes the subject *man*-phrase. One candidate will be an adverbial, as illustrated below.

- (64) a. *Hangsang* *Mary-man-i* *cikakhanta*.
 always *Mary-only-Nom* *be_late*
 (i) It is always the case that only Mary is late. (*always* > *only*)
 (ii) *Mary is the only one who is always late. (**only* > *always*)
- b. *Mary-man-i_i* [*hangsang* *t_i* *cikakhanta*.]
 Mary-only-Nom always *be_late*
 (i) It is always the case that only Mary is late. (*always* > *only*)
 (ii) Mary is the only one who is always late. (*only* > *always*)

Sentence (64a) is not ambiguous; the adverb *hangsang* ‘always’ takes scope over the *man*-phrase. This scope relation changes in (64b), where the *man*-phrase is placed in front of the adverb. Here both surface and inverse scope relations are possible.⁶⁸

Now if the word order change in (64) is only due to scrambling, this will be an argument against the proposal made in this chapter. Under the proposal made here, scrambling of a case-marked *man*-phrase should not change scope relations. I, however, argue that this example does not give evidence against the current approach since the ambiguity of (64b) is due to an independent factor, namely the ambiguous position of the adverb. In (64a), the adverb is adjoined at TP and the ONLY head is right below TP,

⁶⁸ Judgment in this case is rather heterogeneous compared to the data in section 2.3. For example, some speakers say that (64b) only has the surface scope reading (*only* > *always*).

which accounts for the scope relation (*always* > *only*). The inverse scope in (64b) (*always* > *only*) arises when the *man*-phrase is scrambled. The sentential structure is the same, except for the scrambling of the *man*-phrase. By contrast, the surface scope in (64b) (*only* > *always*) is due to low attachment of the adverb *hangsang*. Here the ONLY head is still below TP, but the adverb is attached at VP, which accounts for the new reading.

In order for the above account to work, we need to show that *hangsang* can indeed be attached either at TP or at VP. This is supported by the following case.

- (65) a. **Hangsang** Mary-ka cikakhanta.
 always Mary-Nom be_late
 ‘It is always Mary who is late, i.e. others are never late.’
- b. Mary-ka **hangsang** cikakhanta.
 Mary-Nom always be_late
 (i) ‘Mary is always late, i.e. others are occasionally late.’
 (ii) ?‘It is always Mary who is late.’

In (65a), the adverb precedes the subject, and in (65b), the subject precedes the adverb. Surprisingly, the two different word orders are mapped to two different readings, although there is only one scope-bearing element, namely the adverb. In (65a), the adverb is adjoined at TP, whereas in (65b), it is attached at VP or at TP. When it is attached at TP, the word order is due to scrambling. What is important here is that if the adverb can be attached only at one position, this cannot explain all the readings. Suppose that the adverb *hangsang* can be attached only at TP. This would account for the reading in (65a), but it runs into a problem in (65b). If the new ordering in (65b) is due to scrambling of the subject, (65b) is expected to have the same reading as (65a), since a referential expression is scrambled. This is clearly not the case. This leads to the conclusion that the adverb *hangsang* needs to be attached at VP, as well.

In order to complete the argument, we should look at another sentence in which the *man*-phrase is not case-marked and precedes the scope-bearing element and compare it with (64b). This is given below in (66).

- (66) Mary-man₁ [hangsang t₁ cikakhanta.]
 Mary-only always be_late
 (i) It is always the case that only Mary is late. (*always* > *only*)
 (ii) Mary is the only one who is always late. (*only* > *always*)

This sentence is ambiguous, like (64b), and receives the same account. The surface scope reading (*only* > *always*) is due to the VP-attachment of the adverb, while the inverse scope (*always* > *only*) is due to TP-attachment of the adverb with scrambling of the *man*-phrase. In both cases, the nominative marker is covert, and the position of ONLY-P is the same.

Thus the account in this section does not prove that the nominative marker plays the same role as the accusative marker. In order to make the argument stronger, we have to look for a high adverb that is clearly not generated in the VP area. Unfortunately, these sentential adverbs (e.g. *amato* 'probably') do not interact scopally with a subject DP, and thus word order change does not lead to different interpretations.

2.9.3 Binding and the *Man*-Phrase

This section investigates how the *man*-phrase behaves as an antecedent of anaphors. After providing some background about the effect of scrambling on binding relations, the discussion turns to how they change when the particle *man* is added to a DP.

It is well known that clause-internal scrambling creates a new binding possibility (Mahajan 1990, Tada 1990, Saito 1992, among others). This holds of Korean, as well, as reported in J.-H. Cho (1994). Take (67) for example. The subject anaphor in (67a) has no antecedent, thus the sentence is ungrammatical. If the object NP is scrambled across the subject, however, the scrambled object can be the antecedent of the anaphor. This effect leads to the conclusion that scrambling can be an A-movement.

- (67) a. *Cakicasin-i John-ul pinanhayssta.
 self-Nom John-Acc blamed

'(Lit.) Self blamed John.'

'(Intended) John blamed himself.'

- | | | | |
|-------------------------|--------------|----------------|----------------|
| b. John-ul ₁ | [cakicasin-i | t ₁ | pinanhayssta.] |
| John-Acc | self-Nom | | blamed |

'(Lit.) John, self blamed *t*, i.e. John blamed himself.'

An interesting pattern appears when we look at the case of a *man*-phrase. As in the scope case, case-marked and postposition-marked *man*-phrases contrast with bare *man*-phrases. Let us first consider the case of a case-marked *man*-phrase.

- (68) a. *Cakicasin-i John-man-(ul) pinanhayssta.
self-Nom John-only-Acc criticized

'(Lit.) Self criticized only John.'

'(Intended) John criticized only himself.'

- | | | | |
|------------------------------|--------------|----------------|----------------|
| b. *John-man-ul ₁ | [cakicasin-i | t ₁ | pinanhayssta.] |
| John-only-Acc | self-Nom | | criticized |

'(Lit.) Self criticized only John.'

'(Intended) John criticized only himself.'

- | | | | |
|--------------------------------|---------------------|----------------------|-----------------------|
| c. John-man₁ | [cakicasin-i | e₁ | pinanhayssta.] |
| John-only | self-Nom | | criticized |

'(Lit.) Only John, self criticized *e*.'

(i) Only John criticized himself, i.e. others didn't criticize themselves.

(ii) *John criticized only himself, i.e. John didn't criticize others.

Sentence (68a) is ungrammatical for the same reason as (67a): the anaphor is not bound. In (68b), the *man*-phrase is scrambled to the S-initial position, where it can bind the

anaphor. However, (68b) is still as bad as (68a). In contrast to these two, sentence (68c) is grammatical. Apparently, the bare *man*-phrase can provide an antecedent. The same pattern holds when we replace the anaphor with reciprocals.

The ungrammaticality of (68a) is easy to understand. The subject anaphor lacks an antecedent. But the status of (68b) and (68c) requires further explanation. First, the ungrammaticality of (68b) is not expected on our analysis. If *John-man-ul* 'John-only-acc' is equivalent to a referential expression, as I have been claiming, it must be able to create a new binding possibility, as *John* does in (67b). In fact, if the anaphor carries the same index as *John-man-ul*, the intended meaning of the sentence is easily derived from its structure. This suggests, then, that a purely syntactic condition rules out (68b), whatever that is. Turning to (68c), we note that it is not ambiguous. The one reading available is due to the high ONLY-P above TP, which says that John is the only one who criticized himself. It does not allow the other reading in which the ONLY head is positioned below TP. The unavailability of this reading will be for the same reason as the ungrammaticality of (68b). The data becomes more complicated when we consider the case of *PP-man*.

- (69) a. **cakicasin-i* *John-ekey* *malhayssta*
 self-Nom John-to talked
 '(Lit.) Self talked to John.'
 '(Intended) John talked to himself.'
- b. *John-ekey*₁ [*cakicasin-i* *t*₁ *malyhayssta*.]⁶⁹
 John-to self-Nom talked
 '(Lit.) To John, self talked *t*, i.e. John talked to himself.'

⁶⁹ This sentence may sound little bit awkward, but it is a grammatical sentence. If we replace the anaphor with a reciprocal, the sentence is perfect.

- (i) *John-kwa-Mary-ekey*₁ [*selo-ka* *t*₁ *sakwahayssta*.]
 John-and-Mary-to each_other-Nom apologized
 '(Lit.) To John and Mary, each other apologized *t*, i.e. John and Mary apologized to each other.'

- c. *John-ekey-man₁ [cakicasin-i t₁ malyhayssta.]
 John-to-only self-Nom talked
 ‘(Lit.) Only to John, self talked to t.’
 (i) *John talked only to himself.
 (ii) *John is the only one who talked to himself.

The ungrammatical sentence in (69a) becomes grammatical in (69b) due to scrambling. The postposition does not block the PP from being the antecedent of the following anaphor (Takano 1998: 852-853). Yet the sentence in (69c) is ungrammatical under either reading. The two readings are based on the two possible positions of ONLY-P. Recall from the scope facts that the sentence-initial appearance of the PP-*man* can be either due to scrambling or to focus movement. The binding, which is possible without the particle *man* in (69b), becomes impossible if the particle is added to the PP.

The general answer to these problems relates to a property of the *man*-phrase and the ONLY head. I claim that the spec of ONLY-P is an A-bar-position, and a phrase in this position cannot move to an A-position to serve as an antecedent for the following anaphor (cf. *Improper Movement*). This property holds whether the phrase got to the spec position via movement or it was base-generated there. This explains the ungrammaticality of (68b) and (69c). In (68b), the surface position of the *man*-phrase cannot be an A-position since it moves from the spec of ONLY-P. This makes it impossible for the *man*-phrase to bind the anaphor. In (69c), the DP either moves to the surface position via [Spec, ONLY-P] (the first reading) or it directly moves to the spec position (the second reading). In both cases, binding is not possible.

The question, then, is why (68c) is grammatical (under its first reading) where the *man*-phrase is base-generated in the spec of the high ONLY-P. I argue that binding in (68c) is possible because the empty element, i.e. *pro*, can scramble to an A-position. This means that the real binder is not the *man*-phrase, but the *pro*. Scrambling of *pro* is not visible since it is an empty element to begin with. When scrambling takes place, (68c) has the following structure.

- (70) **John-man** [TP *pro*₁ [TP **cakicasin-i** t₁ **pinanhayssta.**]]
 John-only self-Nom blamed
 'John is the only one who criticized himself.'

One argument for this idea comes from when we replace the empty *pro* in (68c) with an overt pronoun.⁷⁰ If the *pro* is replaced with an overt pronoun, the sentence becomes ungrammatical. If the overt pronoun is scrambled, however, it can bind the anaphor and the sentence becomes grammatical again:

- (71) a. ***John-man**₁ [TP **cakicasin-i** **ku-lul**₁ **pinanhayssta.**]]
 John-only self-Nom he-Acc blamed
 'John is the only one who criticized himself.'
- b. **John-man**₁ [TP **ku-lul**₁ [TP **cakicasin-i** t₁ **pinanhayssta.**]]
 John-only he-Acc self-Nom blamed
 'John is the only one who criticized himself.'

One might ask why the *pro* in (70) or the pronoun in (71b) does not cause a violation of Condition B. Under the proposed idea, this is not a problem. The spec of ONLY-P is not an A-position, thus it does not count as a binder. Note also that the option in (70) is not available for the PP case. This is so because there is no *pro* that associates with the S-initial PP. The empty element is always a trace.

This section has explored another property of *man*-phrases and the ONLY head by looking at binding relations. Apparently complicated data is all explained by the hypothesis that [Spec, ONLY-P] is an A-bar position. The *man*-phrase is distinguished from other referential expressions by this special property, and thus does not create new binding possibilities.

⁷⁰ Thanks to Danny Fox for suggesting this idea.

2.9.4 The Particle on an Embedded Clause

This section investigates the interpretation of the focus particle attached to an embedded clause. The discussion provides further support for the null head analysis. I first point out a case where the standard alternative semantics (Rooth 1985) runs into a problem, and show that our analysis solves the problem without additional assumptions. The sentence in (72) is the example to be discussed in this section.

- (72) John-un [Mary_F-ka Boston-ey on-ket]-**man-ul** anta.
 John-Top Mary-Nom Boston-to came-that-only-Acc know
 ‘(Lit.) John knows only that Mary_F came to Boston.’
 (i) John only knows that Mary_F came to Boston.
 (ii) *John knows that only Mary came to Boston.

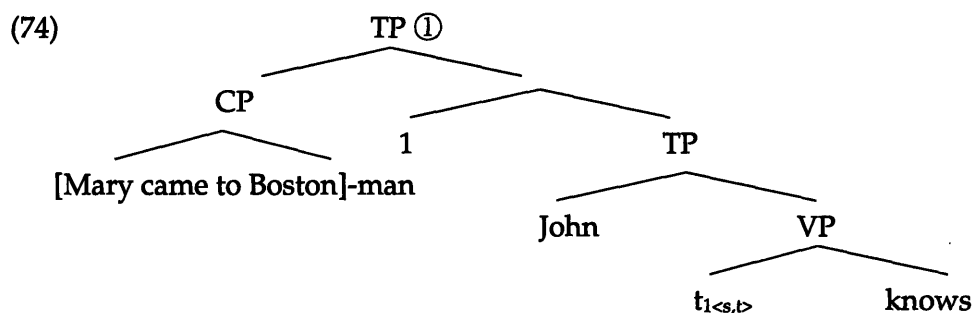
Sentence (72) is not ambiguous. It only has the first reading: John knows that Mary came to Boston, but he does not know whether others came to Boston or not. Suppose that the particle *man* is a propositional operator, like English *only*. Roughly speaking, such an operator would take a proposition, and assert that the selected proposition is the only true proposition among the alternative propositions, which are of course contextually constrained.

This position runs into a problem. Under the assumption that sentences are of type $\langle s, t \rangle$ and that the particle *man* (not the ONLY head) carries the exclusive meaning, such an entry wrongly predicts sentence (72) to mean (ii), instead of (i), as illustrated in (73).

- (73) [Mary_F-ka Boston-ey on-ket]-**man**
 Mary-Nom Boston-to came-that-only
 $= \lambda w. \text{Mary came to Boston in } w \ \& \ \forall x \in \text{ALT}(\text{Mary}): x \text{ came to Boston in } w \rightarrow x = \text{Mary}$
 $= \lambda w. \text{Mary came to Boston in } w \ \& \ \forall x \in \text{ALT}(\text{Mary}): x \text{ did not come to Boston in } w.$

The alternative propositions are determined by F-marking. In this particular case, they are members of the set $\{p: \exists x[x \in \text{ALT}(\text{Mary}) \ \& \ p = \lambda w.x \text{ came to Boston in } w]\}$. The effect of the particle *man* would be to assert that all the propositions in this set are false except the one that the particle is attached to. This amounts to saying that no one other than Mary came to Boston, and John knows that this is the case. However, this is a much stronger claim than the one the sentence is actually making.

One way to avoid this problem is to obligatorily type-raise complement sentences (i.e. sentences in complement positions) from $\langle s, t \rangle$ to $\langle \langle st, t \rangle, t \rangle$ or $\langle \langle st, et \rangle, et \rangle$.⁷¹ Let's take the first option for example. If the sentence is type-shifted from $\langle s, t \rangle$ to $\langle \langle st, t \rangle, t \rangle$, the embedded clause cannot be interpreted *in-situ* due to a type mismatch. It must move to a higher position, leaving a trace of type $\langle s, t \rangle$, similar to QR. A simplified structure will be as follows.



The semantic value of the embedded clause under this higher type would be that in (75). The entry of the particle would be upgraded accordingly, but this is a trivial matter.

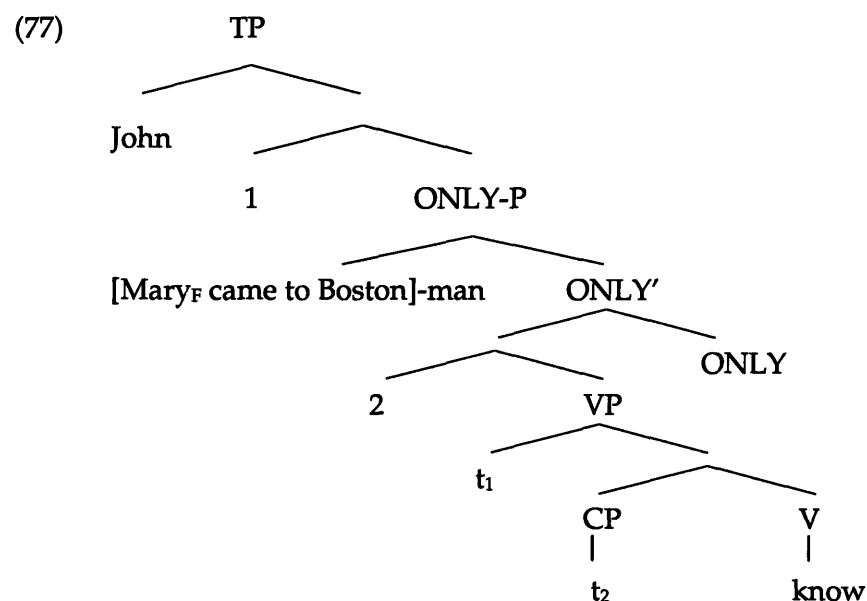
$$\begin{aligned}
 (75) \quad \llbracket \text{CP} \rrbracket &= \lambda P_{\langle st, t \rangle}. P(\lambda w. \text{Mary came to Boston in } w) \ \& \ \forall x \in \text{ALT}(\text{Mary}): P(\lambda w.x \\
 &\quad \text{came to Boston in } w) = 1 \rightarrow x = \text{Mary} \\
 &= \lambda P_{\langle st, t \rangle}. P(\lambda w. \text{Mary came to Boston in } w) \ \& \ \forall x \in \text{ALT}(\text{Mary}): P(\lambda w.x \\
 &\quad \text{came to Boston in } w) = 0
 \end{aligned}$$

⁷¹ Thanks to Irene Heim for pointing this out to me. See also Buring and Hartmann (2001: 264), which points out the same problem.

Through abstraction on the trace of the proposition $(\lambda p_{\langle s,t \rangle}. \text{John knows } p)$, the top node yields the correct reading, as shown below.

$$\begin{aligned}
 (76) \quad \llbracket \textcircled{1} \rrbracket &= (\lambda P_{\langle st,t \rangle}. P(\lambda w. \text{Mary came to Boston in } w) \ \& \ \forall x \in \text{ALT}(\text{Mary}): P(\lambda w. x \\
 &\quad \text{came to Boston in } w) = 0)(\lambda p_{\langle s,t \rangle}. \text{John knows } p) \\
 &= (\lambda p_{\langle s,t \rangle}. \text{John knows } p) (\lambda w. \text{Mary came to Boston in } w) \ \& \ \forall x \in \text{ALT}(\text{Mary}): \\
 &\quad (\lambda p_{\langle s,t \rangle}. \text{John knows } p)(\lambda w. x \text{ came to Boston in } w) = 0 \\
 &= \text{John knows } (\lambda w. \text{Mary came to Boston in } w) \ \& \ \forall x \in \text{ALT}(\text{Mary}): \\
 &\quad \llbracket \text{John knows } (\lambda w. x \text{ came to Boston in } w) \rrbracket = 0 \\
 &= \text{John knows that Mary came to Boston} \ \& \ \forall x \in \text{ALT}(\text{Mary}): \text{John does not} \\
 &\quad \text{know that } x \text{ came to Boston}
 \end{aligned}$$

Although type shifting derives the correct reading, the problem still remains in that the obligatory type-shifting is not justified. The null ONLY head analysis, by contrast, does not have any problem with sentences like (72). The embedded clause moves to [Spec, ONLY-P], as shown below. Here the accusative head (AgroP) is omitted since it is not relevant.



To make this structure interpretable, we need some minor changes with respect to the types of the two arguments of the ONLY head. The first argument is of type $\langle st, t \rangle$ and the second one is of type $\langle s, t \rangle$, as given in (78a). The initial entry is given in (78b) for comparison.

- (78) a. $\lambda P_{\langle st, t \rangle}. \lambda p_{\langle s, t \rangle}. P(p) = 1 \ \& \ \forall q_{\langle s, t \rangle} \in ALT(p): P(q) = 1 \rightarrow q = p$
 b. $\lambda P_{\langle e, t \rangle}. \lambda x_e. P(x) = 1 \ \& \ \forall z_e \in ALT(x): P(z) = 1 \rightarrow z = x$

The tree in (77) yields the following meaning: John knows that Mary came to Boston & $\forall q_{\langle s, t \rangle} \in \{p: \exists x[x \in ALT(Mary) \ \& \ p = \lambda w.x \text{ came to Boston in } w]\}: \text{John knows } q \rightarrow q = \lambda w.Mary \text{ came to Boston in } w$. That is, that Mary came to Boston is the only proposition that John knows. All that is needed is to adjust the lexical entry of the ONLY head so that it can take a proposition as its argument. Given this, the general version of the two entries would be like the following.⁷²

- (79) $\lambda P_{\langle \alpha, t \rangle}. \lambda x_\alpha. P(x) = 1 \ \& \ \forall y_\alpha \in ALT(x): P(y) = 1 \rightarrow y = x$

Before closing the section, I will briefly discuss Büring and Hartmann (2001), who point out the same problem for complement sentences in German and advocate the same solution as proposed here. Their proposal is that focus particles in German always adjoin to non-arguments. Thus a focus particle adjacent to a DP, for instance, does not form a constituent with it, as illustrated below.

⁷² Although I present this general version, we can get rid of it in favor of the initial entry in (78b). Under Chierchia's (1984) position that propositions are of type e , the two entries collapse into one, and the entry in (78b) suffices. Under this position, however, the problem does not arise to begin with, and the standard Roothian analysis would do.

- (80) Nur Hans war betrunken.
 only Hans was drunk
 (i) *[TP [DP Nur Hans] war betrunken]
 (ii) √[TP Nur [TP Hans war betrunken]]

As indicated, the particle *nur* is not adjoined to the following DP *Hans*, but modifies the whole TP that follows it. They support this position by providing arguments related to distribution and scope, details of which I will not go into here. I will only discuss the case where the particle is attached to an embedded clause.

- (81) [Nur [CP dass MARIA Hans geküsst hat] wussten wir [VP t_{CP} t_v]]
 only that Maria Hans kissed has knew we
 (i) The only thing we knew was that MARIA kissed Hans.
 (ii) *We knew that only MARIA kissed Hans.

When *nur* is attached to an embedded clause, as in (81), only one reading is available, namely the one where the focus particle takes matrix scope. Importantly, the reading indicated in (ii) is not available. Büring and Hartmann (2001) show that the reading in (ii) is predicted to arise if the particle is adjoined to the complement clause, unless one adopts type-shifting, as I suggested earlier. Under their approach, however, the problem does not arise, since the particle is not a constituent with the argument CP to begin with. This supports their position. In a broader sense, their position and the proposal made here are essentially the same. They argue that *nur Hans* ‘only John’ is not a generalized quantifier, since there is no such syntactic unit in the first place. I argued that *John-man* ‘John-only’ is not a generalized quantifier, since the particle *man* is an agreement morpheme. Both cases are contrary to a familiar assumption that *only John* and possibly its equivalents in other languages are generalized quantifiers.

To sum up, this section examined the interpretation of the particle *man* attached to an embedded clause. I pointed out that the standard alternative semantics predicts an

incorrect interpretation, and showed that the proposed analysis avoids this problem without additional assumptions.

2.10 Summary

This chapter proposed an account of the distribution and interpretation of the Korean exclusive particle *man*. I first presented some scope facts that are puzzling under the assumption that the particle is a quantificational element. In order to solve this problem, I argued that the particle is an agreement morpheme for an abstract head rather than a scope-bearing element. As an agreement morpheme, the particle merely indicates the presence of a null head ONLY, which carries the quantificational meaning. I claimed that this null head can occur at various points in the tree, and its position (not that of the particle itself) determines the scope relation with respect to other quantificational elements. I also argued for a new correlation between the order of the nominal affixes and the scope of the particle, thus supporting Baker's (1985) Mirror Principle in a new area outside the domain of verbal morphology. Specifically, I argued that the relative order among the particle, case markers, and postpositions reflects the hierarchy of functional heads. This played a crucial role in identifying the position of the ONLY head. The proposed analysis accounted for the puzzling scope facts without making stipulations, and also derived the correlation between the particle's distributional properties and its scopal behavior. Further predictions and apparent counterexamples were also discussed, which provided additional support to the proposed analysis.

Chapter 3

Additive Particles, Scope, and Presupposition

3.1 Introduction

This chapter turns to the scopal behavior of another focus particle in Korean, namely the additive particle *to*. The particle *to* is ambiguous between the additive meaning (corresponding to *also* and *too* in English) and the scalar meaning (corresponding to *even*), and our discussion focuses on the additive meaning. In investigating the scopal behavior of the particle *to*, we take the same strategy as in the previous chapter; that is, we examine how the *to*-attached phrase (henceforth *to*-phrase) behaves scopally in scrambling contexts. Specifically, we would like to see how the presupposition due to the additive particle interacts scopally with another quantificational element in the sentence, and how changes in word order due to scrambling affect the presupposition.

As will be shown shortly, the scopal behavior of the *to*-phrase is distinct from that of QPs and the *man*-phrase. I present an account of this behavior built on the following three elements: the anaphoric view of the additive particle, semantic binding, and principles of economy, and present an account that builds on these three elements. I argue that (i) the anaphoric view of the additive particle is superior to the widespread existential view, (ii) both syntactic and semantic mechanisms are available for variable binding, thus the presence of a bound variable in a dislocated position does not always imply syntactic reconstruction, and (iii) covert operations such as reconstruction and type raising are constrained by an economy principle.

This chapter proceeds as follows. Section 3.2 describes the particle's distribution and case marking. Section 3.3 presents some comparison between the two particles *to* and *man*, which will provide some background for the upcoming discussion. Section 3.4 presents the data which is the main concern of this chapter. In section 3.5, I introduce the three components of the analysis, based on which I give an account of the scope facts in section 3.6. Then, in section 3.7, I briefly discuss related facts in English, and in section

3.8, I present some syntactic similarities between the two particles *to* and *man*. Finally, section 3.9 concludes the chapter with a summary.

3.2 Background

This section describes some distributional properties of the particle *to*. In terms of the constituents that the particle can attach to, the particle *to* has the same properties as the particle *man*. It can be attached to DPs, PPs, and CPs; but it cannot be directly attached to predicates (section 3.2.1). In terms of case marking, however, the particles *to* and *man* diverge in that the former is not compatible with any grammatical case marking (nominative, accusative, and genitive) unlike the latter. Yet, the particle *to* can still co-occur with a postposition, in which case it must follow the postposition (section 3.2.2).

3.2.1 Distribution

The particle *to* shares the properties described in this section with the particle *man*. First, it can attach to DPs (1), PPs(2), and both adjunct and argument CPs (3).

- (1) a. Mary-to oassta.
 Mary-also came
 ‘Mary_F came, too.’
- b. Mary-ka thongsalon-to kongpwuhanta.
 Mary-Nom syntax-also study
 ‘Mary studies syntax_F, too.’
- (2) a. Mary-nun Boston-eyse-to salassta.
 Mary-Top Boston-in-also lived
 ‘Mary has lived in Boston_F, too.’

- b. Mary-ka John-ul Bill-hanthey-**to** sokayhayssta.
 Mary-Nom John-Acc Bill-to-also introduced.
 ‘Mary introduced John to Bill_F, too.’

- (3) a. Mary-nun [John-ul mannaki-wihayse]-**to** Boston-ey oassta.
 Mary-Top John-Acc meet-to-also Boston-to came
 ‘Mary came to Boston also to meet John.’

- b. Mary-nun [John_F-i Boston-ey on-ket]-**to** anta.
 Mary-Top John-Nom Boston-to came-that-also know
 ‘Mary also knows that John_F came to Boston.’

In each example, the particle *to* triggers a so-called existential presupposition (I.-H. Lee 1977, Karttunen & Peters 1979).⁷³ In (1a), for example, it is presupposed that there is someone other than Mary who came. In (3a), it is presupposed that Mary came to Boston with some other purpose, besides meeting John. When focus is only on the part of the adjacent phrase, focus plays a role by restricting the set of alternatives, as in the case of *man* ‘only’. In (3b), for instance, the alternative propositions are elements of the set $\{p: \exists x[x \neq \text{John} \ \& \ p = \lambda w.x \text{ came to Boston in } w]\}$, where the F-marked element is replaced by a variable. Due to the additive particle, the sentence presupposes that there is another proposition from this set that Mary knows. As can be seen in the glosses, the particle is always adjacent to a phrase that contains focus, and forms a constituent with it. In this regard, it is different from its English equivalent *too* or *also*, whose distribution is more constrained. Thanks to this constituency, the particle *to* undergoes scrambling along with the focus phrase, which raises new questions to explore.

Next, when a predicate is to be focused, a nominalizer must be present between the verbal stem and the particle *to*. Simultaneously, a dummy verb is inserted to mark tense, again in parallel to the case of *man*.

⁷³ This is a widespread view of additive particles, although I reject this view shortly (section 3.5.1).

- (4) a. Mary-nun yeppu-ki-to hay-ss-ta.
 Mary-Top pretty-Nml-also do-Past-Decl
 'Mary was pretty_F, too (e.g. in addition to being smart).'
- b. Ku-secem-un chayk-ul sa-ki-to ha-n-ta.
 that-bookstore-Top book-Acc buy-Nml-also do-Pres-Decl
 'That bookstore also buys_F books (e.g. in addition to selling them).'

3.2.2 Case Marking

The particle *to* is not compatible with any case marking, unlike the particle *man*. Overt case markers in any position render the sentences ungrammatical, as shown in the following examples.

- (5) a. Mary-(*ka)-to-(*ka) oassta.
 Mary-(Nom)-also-(Nom) came
 'Mary_F came, too.'
- b. Mary-ka thongsalon-(*ul)-to-(*lul) kongpwuhanta.
 Mary-Nom syntax-(Acc)-also-(Acc) study
 'Mary studies syntax_F, too.'

Postpositions, by contrast, are allowed to co-occur with the particle *to*. If they co-occur, postpositions always precede the particle. Examples are repeated from (2) as (6).

- (6) a. Mary-nun Boston-eyse-to salassta.
 Mary-Top Boston-in-also lived
 'Mary has lived in Boston_F, too.'

b. Mary-ka	John-ul	Bill-hanthey-to	sokayhayssta.
Mary-Nom	John-Acc	Bill-to-also	introduced.

‘Mary introduced John to Bill_F, too.’

If the order is reversed, the sentences become ungrammatical.

3.3 Comparing the Two Particles *To* and *Man*

The previous section described distributional properties of the particle *to*, most of which it shares with the particle *man*. This section turns to some differences that sets the two particles apart, and then spells out basic assumptions regarding the syntax of the *to*-phrase. This will set the stage for the upcoming discussion about the scopal behavior of the particle *to*.

3.3.1 Quantificational Meaning of Focus Particles

Sentences containing exclusive and additive particles are often paraphrased as sentences that contain some quantificational elements – in any language that has those particles. For example, the (a) sentences in (7-8) are assumed to have the same truth conditions as the (b) sentences.

- (7) a. Only John came.
 b. John came, and no one who is not John came.
- (8) a. John came, too.
 b. John came, and someone who is not John came.

For this reason, it has been proposed that the exclusive particle is a sort of a universal quantifier (Ryu 1995, Horn 1996); and analogously that the additive particle is an existential quantifier (Ryu 1995). A closer look, however, tells us that the quantificational

force of the two particles is different in nature, especially with respect to where the quantificational force belongs to. It is well known since Horn (1969) that the exclusive particle carries the universal force as assertion, whereas the additive particle carries the existential force as presupposition (see also Krifka 1998b). Therefore, if we make a distinction between assertion and presupposition, (7a) and (8a) are represented as in (9a) and (9b) respectively.

(9) a. Assertion: No one who is not John came.

Presupposition: John came.⁷⁴

b. Assertion: John came.

Presupposition: Someone who is not John came.

If we focus on the assertion part, only the exclusive particle carries a quantificational meaning. The additive particle does not contain a scope-bearing element in the assertion part, and it is only in the presupposition that we find an existential quantifier.

This contrast between the two particles leads to a difference when we look at their scopal behavior. When we investigated the scopal behavior of the particle *man* in the previous chapter, we did not have to consider the issue of presupposition. This is, however, not the case with the particle *to*. In order to tell the scope of the additive particle, we need to look at the presupposition of the sentence. Specifically, we would like to see how the presupposition due to the additive particle scopally interacts with another quantificational element in the sentence, and how changes in word order due to scrambling affect the presupposition. We also note that once the presupposition of a sentence is affected, it is reflected in the discourse felicity of the sentence. A sentence can be felicitous (or not) in the same discourse because the presupposition has changed.

⁷⁴ Horn (1996) recants his earlier proposal, and proposes that *only* just carries an existential presupposition. For example, the presupposition of *only John came* is that *someone came*, not that *John came*. This change is due to his new position that *only* is the converse of *all*, and as such the existential presupposition of the universal quantifier carries over to *only*.

3.3.2 Multiple Occurrences

The previous section maintained that the additive particle is a quantificational element, although the quantificational force resides in the presupposition part. One important question to ask at this point is where the quantificational meaning comes from. In particular, we are interested in whether the so-called existential presupposition is due to the particle *to* itself, or there is an abstract head, say, *ALSO*, that carries the existential presupposition, as claimed for the particle *man*. If the particle *to* is parallel to the particle *man* in every aspect, the second option would be the null hypothesis. In such a position, the particle *to* would be an agreement morpheme that is licensed by an abstract head. Recall the claim of the previous chapter that the particle *man* is an agreement morpheme for an abstract head *ONLY*. The abstract head, not the particle, carries the exhaustive meaning.

Now the question is how we can test the existence of such an abstract head. One way to answer this question is to see whether the multiple occurrences of the additive particle give rise to the same kind of ambiguity as attested in the multiple occurrences of the particle *man* (see section 2.6.2 for discussion). Specifically, we would like to know whether the multiple occurrences of the particle *to* would be able to indicate one instance of the hypothetical *ALSO* head. If that is possible, it would be evidence for such a head. The relevant sentence is given in (11), and the case of the particle *man* is repeated in (10) for a comparison.

- (10) John-**man** sakwa-**man** mekesse.
 John-only apple-only ate
 ‘Only John ate only apples.’

- (i) John is the only one who ate only apples. Others ate other fruits as well as apples.
(ii) John is the only one who ate anything, and John ate only apples (not other fruits).

(11) John-to sakwa-to mekesse.

John-also apple-also ate

‘(Lit.) John-also ate apples-also.’⁷⁵

(i) Someone who is not John ate apples in addition to something else, and John also ate apples in addition to something else.

(ii) *Someone who is not John ate something that is not apples. In addition to this, John ate apples.

In order to facilitate the readings in (11), let us assume that the discourse context consists of only two people, namely John and Mary. We also assume that apples and pears are the only food under discussion. In this context, the first reading of (11) says that Mary ate apples as well as pears, and John also did the same; that is, John also ate apples as well as pears. This reading contains two distinct presuppositions, each of which is due to the occurrence of the particle *to*. The existence of this first reading is not surprising. Whether it is the particle *to* or an abstract head that carries the presupposition, this reading is expected to be available.

The other reading, which is expected only under the abstract ALSO hypothesis, is the following: <Mary, pears> is a pair that satisfies the eating relation (i.e. Mary ate pears), and in addition to this pair, the pair <John, apples> also satisfies the eating relation (i.e. John ate apples). Under this reading, the two presuppositions of the first reading collapse into one presupposition. Now in order to see the availability of the second reading, we have to see whether the sentence in (11) is felicitous in a context where Mary ate only pears. The sentence is expected to be felicitous in such a context if this second reading is available. Crucially, it does not constitute a felicitous discourse, which means this reading is not available, as indicated above.

This result answers the question raised at the beginning of this section. We do not postulate an abstract head for the additive particle. The particle itself is responsible

⁷⁵ As already mentioned, the particle *to* directly follows the focused constituent, unlike its English counterparts *too*, *also*, and *as well*. Here I provide a literal translation to make clear that the particle forms a constituent with the focused phrase, although it is not grammatical in English.

for the presupposition, and the *to*-phrase as a whole is defined as a generalized quantifier of type $\langle et, t \rangle$ (see section 3.5.1).

3.3.3 Syntax of the *To*-Phrase

This section lays out basic assumptions regarding the syntax of the *to*-phrase. Although the two differences noted in the preceding sections distinguish the additive particle from the exclusive particle, these differences do not directly bear on how they are different syntactically (of course, except for the presence or absence of the abstract head). On the contrary, I pursue the null hypothesis that the particles *man* and *to* share the same syntax, the specific details of which will be specified very shortly. I first present an apparent difference between the two particles regarding their scope-taking properties with respect to negation (briefly discussed in chapter 2), and then show that this difference is due to an independent factor, and thus does not disprove the null hypothesis.

The null hypothesis I am pursuing consists of two assumptions. First, I assume that the *to*-phrase moves in the overt syntax to the spec of some focus projection in parallel to the *man*-phrase (see also Sohn 1995). This focus projection would be distinct from ONLY-P. The ONLY head carries a very specific meaning, whereas the focus head for the *to*-phrase does not carry a quantificational meaning, as claimed in the previous section. Yet, I submit that the relation between the focus head and the *to*-phrase could still be some kind of licensing or agreement relation, as in the case of the ONLY head and the *man*-phrase. Second, I assume that this focus head can occur in various positions in the syntactic tree. Again, the null assumption would be that it would be able to occur in the same positions as the ONLY head.⁷⁶ Since the particle *to* always follows postpositions, we infer, relying on the Mirror Principle, that the focus head is at least above VP (or, more strongly, above PP). Since the *to*-phrase is not compatible with any

⁷⁶ As Irene Heim points out, this may not be the null assumption. The ONLY has specific requirements (i.e. lexical entries) to satisfy, whereas the focus head is only a licensing head that is semantically vacuous. Given this, the distribution of ONLY is conditioned by its semantic types (interpretability), whereas a vacuous head is expected to have more freedom in its distribution.

With these assumptions in mind, we turn to how the particle *to* interacts scopally with negation (see also section 2.7.2). The descriptive generalization is that only the particle *man* can take scope below negation. The particle *to* always takes scope over negation. This contrast is exemplified in (12) and (13).

- As can be seen in the translation, sentence (12) is ambiguous. The particle *man*, i.e. the ONLY head, can take either narrow or wide scope with respect to negation. By contrast, the particle *to* only takes wide scope over negation. The only reading available for (13) is that Mary didn't meet John, and there is another person that Mary didn't meet. The other reading (*Neg* > *also*) is expected to arise since presupposition survives negation. This reading, however, is not available. If it were available, the sentence in (13) would be

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felicitous in a situation where Mary met everyone except John. It is not an appropriate utterance in such a context.⁷⁸

Let us first focus on how the two readings in (12) are derived. Given that the scope of the particle *man* is due to the position of the ONLY head, we can account for the ambiguity of (12) by positing two ONLY heads around negation: one above negation, and the other below negation. Depending upon which ONLY head is present in the tree, we get one of the two readings.⁷⁹ Under the null hypothesis that we are pursuing, this means that the focus head that licenses the *to*-phrase can in principle occur above or below negation, and thus should allow the same type of ambiguity. This is not the case, as we see in (13). Of the two possible positions, only the one above negation is available. Based on the non-ambiguity of (13), one might argue that the *to*-phrase moves to the spec of a focus projection that is positioned above negation; that is, there is no focus head below negation. Hasegawa (1994) and Sohn (1995) indeed made such a proposal. This position, however, cannot accommodate the fact in (12). If there is one focus projection to the spec of which all focused phrases move, (12) is also expected to be unambiguous, contrary to fact.

I claim that this difference between *man* and *to* is only apparent. The *to*-phrase can in principle take scope below negation, and thus a focus head below negation exists for a *to*-phrase, as well. One argument comes from the following case, where the topic marker *nun* intervenes between the particle *to* and negation.

⁷⁸ It is often assumed that *too* in English is a positive polarity item, as well. Given the right context, however, *too* can occur within the scope of negation, and thus disproves the PPI account. The following example is taken from Rullmann (2003).

- (i) a. Mary ate the lasagna, but she couldn't eat the spaghetti, too.
b. If Ian cooked the food, he shouldn't wash the dishes, too.

⁷⁹ This position is plausible only when we assume one fixed position for negation in Korean. If negation in Korean does not have one fixed position, as advanced in Beck & Kim (1997), the account of (12) should be different. Under such a position, the ambiguity will be explained by moving negation around one ONLY head. Note, however, that the particle *to* should be a PPI under this account, too, in order to account for the nonambiguity of (13), and the argumentation in this section remains intact.

- (14) Mary-ka John-to mannaci-nun ani hayssta
 Mary-Nom John-also meet-Top not did
 (i) *Mary didn't meet John, either. (*also > Neg)
 (ii) Mary didn't meet John, although he met someone else. (Neg > also)

Sentence (14) is the same as (13) except that the topic marker *nun* is added to the predicate. As soon as the topic marker appears, it becomes possible for the particle *to* to take scope below negation. This shows that the particle *to* can take scope below negation, as long as it is not within the immediate scope of negation. This in turn reminds us of the well-known property of polarity items. Negative Polarity Items (NPIs) must be in the immediate scope of negation (among many other licensing operators), and Positive Polarity Items (PPIs) must not be in the immediate scope of negation (Linebarger 1980, 1987).⁸⁰ Applied to the case in hand, this means that the particle *to* is a PPI, and as such, it cannot take scope below negation; however, if there is another scope-bearing element intervening between the particle and negation, it can escape the PPI requirement.

The point of this discussion is that the difference between (12) and (13) does not argue against our null hypothesis. The difference is due to an independent property of the particle *to* as a PPI; and given its PPI status, the scope relation between the particle *to* and negation is not a diagnostic for locating a focus projection whose spec the *to*-phrase occupies. Therefore, we maintain our hypothesis that the two particles share the same syntax. Both the *man*-phrase and the *to*-phrase move to the spec of a focus head, which can occur in various positions in the tree.

⁸⁰ A well-known PPI, *some* in English, exhibits the same property. Usually it cannot take scope below negation, but can if it is not within the immediate scope of negation. Thanks to Irene Heim for pointing this out to me. The following data from Szabolcsi (2004) illustrate this point.

- (i) a. John didn't call someone. (* not > some)
 b. No one called someone. (* no one > some)
 (ii) a. Not every student said something. (√ not > every > some)
 b. John doesn't always call someone. (√ not > always > some)

3.3.4 Summary

In this section, I stated my position on three issues. First, I claimed that investigating the scope of the additive particle amounts to examining the presupposition of sentences containing the particle. Second, I showed that the so-called existential presupposition of the additive particle comes from the particle itself, not from an abstract head; this is one difference between the particle *man* and *to*. Third, I argued that, despite apparent differences, the particles *man* and *to* share the same syntax. At one point in the derivation, both *man*-phrases and *to*-phrases undergo focus movement to the spec of a focus projection, which occurs in various positions in the tree.

3.4 The Scope Facts

This section presents the scopal behavior of the additive particle *to*, with special focus on how the *to*-phrase interacts scopally with another quantificational element in scrambling contexts. As mentioned already, presuppositions provide a window onto the scopal relations of sentences containing the *to*-phrase. Thus we pay attention to how the presupposition of the *to*-phrase interacts with a quantificational element in the sentence. I introduce three factors that affect the scope of the *to*-phrase, each of which is dealt with in the following three sections.

3.4.1 Scrambling and the Scope of the *To*-Phrase

Let us first see how scrambling affects the scope of the *to*-phrase. There are two cases in which scrambling is relevant. In the first case, the *to*-phrase undergoes scrambling across another QP. In the second case, a QP undergoes scrambling across the *to*-phrase. I will start with the first case.⁸¹

⁸¹ The data in this section holds of the *to*-phrase marked by a postposition, as well. In the interest of space, the examples of *PP-to* are omitted.

- (15) **Motun-sonyen-i** **Mary-to** **coahanta.**
 every-boy-Nom Mary-also like
 ‘(Lit.) Every boy likes Mary-also.’
- (i) For each boy *x*, there is someone other than Mary who *x* likes. (*every* > *also*)
 (ii) There is someone other than Mary who every boy likes. (*also* > *every*)

This sentence is ambiguous, as indicated. The *to*-phrase can take both wide and narrow scope with respect to the QP *motun-sonyen* ‘every boy.’ If the *to*-phrase takes scope over the QP, there should be another person besides Mary that every boy likes. Let’s call this a strong reading. By contrast, if the QP takes scope over the *to*-phrase, it is not required that there is a particular person in addition to Mary that every boy likes. This reading allows each boy to like different people, as long as they all like Mary. That is, co-variation is allowed. Let’s call this a weak reading. Note also that the strong reading is not plausibly attributable to a covert movement of the *to*-phrase over the subject QP, given the lack of covert movement in general in Korean.⁸²

Given this ambiguity, we can think of two situations where one can utter (15) felicitously. First, (15) is felicitous in a situation where a particular individual, say Jane, is loved by every boy. This is the case of the strong reading. Yet, this sentence is also appropriate when the context does not provide such an individual, as long as each boy likes someone. For example, a list of pairs in which the first member (a boy) likes the

⁸² The same type of ambiguity is attested when a universal quantifier precedes an existential quantifier, as shown in (i).

- (i) **Motun-sonyen-i** **enu-sonye-lul** **coahanta.**
 every-boy-Nom some-girl-Acc like
 ‘Every boy likes some girl.’
- a. For each boy, there is a girl that he likes.
 b. There is a girl that every boy likes.

Again, under the assumption that Korean is a scope-rigid language, the ambiguity of (i) cannot be due to a long QR of the existential quantifier. In order to account for this, it has been proposed that the wide scope of the indefinite in reading (b) is due to its specific interpretation (Sohn 1995) or to its choice function interpretation (Park 2002). Under either account, the ambiguity of (i) does not argue against the scope-rigidity generalization.

second member (a girl) can precede this sentence and forms a felicitous discourse, as illustrated in (16). Here Alex, Chris, and Edward are all the boys in the discourse.⁸³

- (16) Alex-ka Becki-lul, Chris-ka Diana-lul, Edward-ka Franny-lul coahanta.
 Alex-N Becki-A Chris-N Diana-A Edward-N Franny-A like
 ‘Alex likes Becki, Chris likes Diana, and Edward likes Franny.’

Motun-sonyen-i Mary-to coahanta.
 every-boy-Nom Mary-also like
 ‘(Lit.) Every boy likes Mary-also.’

Now let us see what happens if the *to*-phrase undergoes scrambling. This is illustrated in (17).

- (17) Mary-to₁ [motun-sonyen-i t₁ coahanta.]⁸⁴
 Mary-also every-boy-Nom like
 ‘(Lit.) Mary-also, every boy likes *t*.’
 (i) *For each boy *x*, there is someone other than Mary who *x* likes. (**every > also*)
 (ii) There is someone other than Mary who every boy likes. (*also > every*)

When the *to*-phrase is scrambled, only the strong reading remains; the weak reading has disappeared. Since the weak reading is missing, the discourse in (16) would become infelicitous if the second sentence in (16) is replaced by (17). This is indeed the case, as illustrated in (18). The preceding pair-list does not meet the presupposition of the strong reading, and thus the discourse is infelicitous.

⁸³ The list in the preceding context does not have to be a pair. Each boy can like more than one person.

⁸⁴ This sentence is, by hypothesis, structurally ambiguous. The sentence-initial appearance of the *to*-phrase can be either due to scrambling or base-generation, in parallel to the *man*-phrase (see sections 2.8 and 3.8). Since the issue of reconstruction arises only under the scrambling structure, I consider only the scrambling structure. For this reason, the empty element is marked as a trace (*t*), rather than as *e*, which covers both *pro* and a trace.

- (18) Becki-lul Alex-ka, Diana-lul Chris-ka, Franny-lul Edward-ka coahanta.⁸⁵
 Becki-A Alex-N Diana-A Chris-N Franny-A Edward-N like
 ‘(Lit.) Becki, Alex likes *t*, Diana, Chris likes *t*, and Franny, Edward likes *t*.’

#Mary-to₁ [motun-sonyen-i t₁ coahanta.]
 Mary-also every-boy-Nom like
 ‘(Lit.) Mary-also, every boy likes *t*.’

The contrast between (15) and (17) shows that the scrambled *to*-phrase does not undergo reconstruction. This is surprising, given that we define the *to*-phrase as a quantifier and scrambled QPs can undergo reconstruction. This is the first puzzle, which I refer to as *anti-reconstruction effect* of the *to*-phrase.

Next, we turn to the second case of scrambling, where the object QP is scrambled across the subject *to*-phrase. Here we find another unexpected pattern. Sentence (19) exemplifies the relevant case, but with no scrambling.

- (19) Mary-to motun-sonyen-ul coahanta.
 Maryry-also every-boy-Acc like
 ‘(Lit.) Mary-also likes every boy.’
 (i) There is someone other than Mary who likes every boy. (*also* > *every*)
 (ii) *For each boy *x*, there is someone other than Mary who likes *x* (**every* > *also*)

In (19), the surface order determines the scope relation, in conformity with the scope-rigidity. The *to*-phrase scopes over the QP, and thus only the strong reading is available. The other scope relation where the QP takes scope over the *to*-phrase is not available. If it were, the sentence would make a felicitous utterance when the preceding context provides a pair-list. This is not the case:

⁸⁵ In order to rule out a confounding factor, the preceding context also has a scrambling structure. This, however, does not matter, since the discourse is still infelicitous even when the preceding context has no scrambling.

- (20) Amy-ka Bill-ul, Cathy-ka Dave-lul, Emily-ka Fred-lul coahanta.
 Amy-N Bill-A Cathy-N Dave-A Emily-N Fred-A like
 ‘Amy likes Bill, Cathy likes Dave, and Emily likes Fred.’

#Mary-to motun-sonyen-ul coahanta.
 Mary-also every-boy-Acc like
 ‘(Lit.) Mary-also likes every boy.’

In the context provided, each boy has someone other than Mary who likes him. This context satisfies the presupposition of the weak reading, but the discourse is not felicitous.⁸⁶ This confirms that the weak reading is missing. By contrast, the availability of the strong reading explains the infelicity of this discourse straightforwardly. The pair-list does not provide an individual whom every boy likes, which is required by the strong reading. The infelicity follows from this presupposition failure.

Now let us look at what happens when the object QP undergoes scrambling.

- (21) Motun-sonyen-ul₁ [Mary-to t₁ coahanta.]
 every-boy-Acc Mary-also like
 ‘(Lit.) Everyboy, Mary-also likes *t*.’

(i) There is someone other than Mary who likes every boy. (*also* > *every*)

(ii) *For each boy *x*, there is someone other than Mary who likes *x* (**every* > *also*)

The scrambled sentence is still unambiguous. The *to*-phrase can only take scope over the QP, although the QP precedes the *to*-phrase. Recall that scrambled QPs can take scope in

⁸⁶ Some speakers find this discourse felicitous. For those speakers, the particle *to* seems to function as a discourse particle (like a kind of conjunction); thus the second sentence means something like ‘In addition to what’s already been said, it is also the case that Mary likes every boy.’ But note that this reading is not equal to the reading we are interested in. Under this reading, there is no scopal interaction between the particle and the object QP. Therefore, the felicity in this case does not prove the existence of the inverse scope in (19). Thanks to Sabine Iatridou for pointing this out to me.

their surface position. For example, if we replace the *to*-phrase in (21) by an existential quantifier, the sentence becomes ambiguous.

- (22) Motun-sonyen-ul₁ [nwukwunka-ka t₁ coahanta.]
 every-boy-Acc someone-Nom like
 '(Lit.) Everyboy, someone likes *t*.'
 (i) There is someone who likes every boy. (some > every)
 (ii) For each boy *x*, there is someone who likes *x* (every > some)

Given that the scrambled QP can take scope in the scrambled position in (22), it should be able to do the same in (21), which will lead to the weak reading. This is not the case. The lack of the weak reading is confirmed by the infelicity of the following discourse.

- (23) Bill-ul Amy-ka, Dave-lul Cathy-ka, Fred-lul Emily-ka coahanta.
 Bill-A Amy-N Dave-A Cathy-N Fred-A Emily-N like
 '(Lit.) Bill, Amy likes *t*, Dave, Cathy likes *t*, and Fred, Emily likes *t*.'

- #Motun-sonyen-ul₁ [Mary-to t₁ coahanta.]
 every-boy-Acc Mary-also like
 '(Lit.) Every boy, Mary-also likes *t*.'

If we compare this to the felicity of (16), the contrast becomes clearer. In both (16) and (23), the QP precedes the *to*-phrase and is expected to take scope over it. Therefore, the discourse in (23) is expected to be felicitous just like (16), contrary to fact. The apparent generalization is that a QP undergoes obligatory reconstruction when scrambled across the *to*-phrase, but not when scrambled across other QPs. This asymmetry suggests that something about the additive particle triggers the reconstruction. In the following discussion, we refer to this pattern as *reconstruction effect* of QPs.

This section identified two generalizations regarding how scrambling affects the scope of the *to*-phrase. The first one is the anti-reconstruction effect of the *to*-phrase; the *to*-phrase scrambled across a QP cannot undergo reconstruction. The second one is the

reconstruction effect of the QP; the QP scrambled across the *to*-phrase seems to undergo obligatory reconstruction. In both cases, the patterns are contrary to what we expect based on the behavior of QPs.

3.4.2 The Role of Context: Pair-Lists vs. Natural Functions⁸⁷

This section presents another factor that affects the scope of the *to*-phrase, namely the nature of the preceding context. Interestingly, the two effects due to scrambling (reconstruction and anti-reconstruction effects) disappear if the preceding context provides a functional term that contains a bound variable. Since both effects arise in scrambled sentences, this section focuses on scrambled sentences.

Let us start with the anti-reconstruction effect. If a uniform relation, i.e. a function, appears in the preceding context, the scrambled *to*-phrase seems to undergo reconstruction. Since it takes scope in the trace position, co-variation becomes possible.

⁸⁷ I borrow the terms ‘pair-lists’ and ‘natural functions’ from the literature on functional questions (see section 3.5.2). I assume with Chierchia (1991) that natural functions (i.e. functions that have a corresponding functional expression, e.g. *his mother*) are distinguished from pair-lists in that only natural functions can be defined by intension.

(24) **Caki-emeni-lul₁** [**motun-sonyen-i** **t₁** **coahanta.**]^{88, 89}
 self-mother-Acc every-boy-Nom like
 ‘(Lit.) Self’s mother, every boy likes *t*.’

Mary-to₁ [**motun-sonyen-i** **t₁** **coahanta.**]
 Mary-also every-boy-Nom like
 ‘(Lit.) Mary-also, every boy likes *t*.’

‘For each boy *x*, *x* likes his mother, and *x* likes Mary_F, too.’

Compare the discourse in (24) with the one in (18) in the previous section. In (18), we noticed that if the *to*-phrase is scrambled, only the strong reading is available; thus the pair-list in the preceding context cannot satisfy the presupposition of the strong reading. What is surprising about (24) is that the same sentence becomes felicitous although the preceding context still does not provide a salient individual whom every boy likes. In the given context, each boy likes his own mother, so there is no one who is liked by every boy. The discourse should be infelicitous. The felicity of the discourse in (24) suggests, then, either that the *to*-phrase can undergo reconstruction in this particular context, or that the function *caki-emeni* ‘his mother’ somehow can satisfy the

⁸⁸ The discourse in (24) can be an answer to a question like *Who does every boy like?*, where the *wh*-word is also scrambled to the *S*-initial position, as shown below in (i). Note that Korean is a *wh*-in-situ language, and thus does not require *wh*-words to move to the *S*-initial position.

(i) **Nwukwu-lul₁** [**motun-sonyen-i** **t₁** **coahani?**]
 who-Acc every-boy-Nom like
 ‘(Lit.) Who, every boy likes *t*?’

It is also important that the first sentence has a scrambling structure. Otherwise, the discourse is not felicitous. We come back to this point again in section 3.6.1.

⁸⁹ The bound variable *caki* has another life as a 2nd person pronoun in colloquial speech. Thus the discourses in (24) and (25) have another interpretation, as given in (ia) and (ib) respectively.

- (i) a. Every boy likes your mother, and every boy likes Mary_F, too.
- b. Your mother likes every boy, and Mary_F likes every boy, too.

The discussion in this section only cares about cases where *caki* is interpreted as a bound variable, and we do not consider this ambiguity in the following discussion.

presupposition of the strong reading. Whatever the reason might be, the functional term in the preceding context obviates the anti-reconstruction effect.

We find a similar pattern with respect to the reconstruction effect, too. Although the scrambled QP seems to obligatorily reconstruct in (21), it seems to take scope in the scrambled position if the preceding context provides a function, as illustrated in (25).

- (25) **Motun-sonyen-ul₁** [**caki-emeni-ka** *t₁* **coahanta.**]⁹⁰
 every-boy-Acc self-mother-Nom like
 ‘(Lit.) Every boy, self’s mother likes *t*.’

Motun-sonyen-ul₁ [**Mary-to** *t₁* **coahanta.**]
 every-boy-Acc Mary-also like
 ‘(Lit.) Every boy, Mary-also likes *t*.’

‘For each boy *x*, *x*’s mother likes *x*, and Mary_F likes *x*, too.’

Again, it is surprising that the discourse in (25) is felicitous. We noticed in the previous section that only the strong reading is available in the second sentence of (25). Thus in order for this sentence to be felicitously uttered, the preceding context should provide an individual other than Mary who likes every boy. The first sentence of (25) does not provide such an individual since each mother likes her own son and there is no one who likes every boy. Thus this discourse is expected to be infelicitous. This shows that the functional term in the preceding context cancels the reconstruction effect. As in the case of (24), two possibilities emerge. Either the QP can somehow take scope in its surface position in this context, or the function can meet the presupposition of the strong reading.

To summarize, I showed that the reconstruction and the anti-reconstruction effects require some modification. The scrambled *to*-phrase can take scope in its trace

⁹⁰ Note that the scrambled QP can bind the bound variable in the subject position and rescues the sentence from a weak crossover (WCO) violation. See Mahajan (1990), Tada (1990), Saito (1992).

position if the preceding sentence contains a functional term in a position parallel to that of the *to*-phrase. Similarly, the scrambled QP can take scope in its surface position if the preceding sentence contains a functional term, again in a position parallel to that of the *to*-phrase.

3.4.3 Ordering Restrictions

This section introduces an ordering restriction that correlates with the nature of the focused phrase. In brief, a functional term can satisfy the presupposition of the *to*-phrase that contains an individual term, whereas an individual term cannot satisfy the presupposition of the *to*-phrase that contains a functional term. Thus the ordering between a functional term and an individual term affects discourse felicity. Interestingly, this restriction applies only to scrambled sentences. There is no such ordering restriction in sentences with base order. Let me first show the good discourse. The discourses given below are repeated from (24) and (25) in the previous section.

- (26) **Caki-emeni-lul₁** [**motun-sonyen-i** *t*₁ coahanta.]
 self-mother-Acc every-boy-Nom like
 ‘(Lit.) Self’s mother, every boy likes *t*.’

- Mary-to₁** [**motun-sonyen-i** *t*₁ coahanta.]
 Mary-also every-boy-Nom like
 ‘(Lit.) Mary-also, every boy likes *t*.’

 ‘For each boy *x*, *x* likes *x*’s mother, and *x* likes Mary_F, too.’

- (27) **Motun-sonyen-ul₁** [**caki-emeni-ka** *t*₁ coahanta.]
 every-boy-Acc self-mother-Nom like
 ‘(Lit.) Every boy, self’s mother likes *t*.’

Motun-sonyen-ul₁	[Mary-to	t₁	coahanta.]
every-boy-Acc	Mary-also		like

‘(Lit.) Every boy, Mary-also likes *t*.’

‘For each boy *x*, *x*’s mother likes *x*, and Mary likes *x*, too.’

In both (26) and (27), the uniform relation in the first sentences seems to be able to satisfy the presupposition of the second sentences where an individual term is in focus (with the particle *to* attached to it). Although there is no particular individual that will make the strong reading felicitous, it does not cause a problem.

If a functional term is focused, however, an interesting contrast appears. It seems that an individual term in the preceding context cannot satisfy the presupposition of the *to*-phrase that contains a function. Consider the following discourses.

(28) **Mary-lul₁** **[motun-sonyen-i** **t₁** **coahanta.]**
 Mary-Acc every-boy-Nom like
 ‘(Lit.) Mary, every boy likes *t*.’

#Caki-emeni-to₁ **[motun-sonyen-i** **t₁** **coahanta.]**
 self-mother-also every-boy-Nom like
 ‘(Lit.) Self’s-mother-also, every boy likes *t*.’

‘For each boy *x*, *x* likes Mary, and *x* likes *x*’s mother_F, too.’

(29) **Motun-sonyen-ul₁** **[Mary-ka** **t₁** **coahanta.]**
 every-boy-Acc Mary-Nom like
 ‘(Lit.) Every boy, Mary likes *t*.’

#Motun-sonyen-ul₁ [caki-emeni-to t₁ coahanta.]
 every-boy-Acc self-mother-also like
 ‘(Lit.) Every boy, self’s-mother-also likes *t*.’

‘For each boy *x*, Mary likes *x*, and *x*’s mother_F likes *x*, too.’

The discourses in (28) and (29) are not felicitous. Speakers find them confusing and incoherent, and suggest that the preceding context should contain a functional term, too. If the individual term in the first sentence is replaced by a functional term, the discourse becomes felicitous.

(30) Caki-apeci-lul₁ [motun-sonyen-i t₁ coahanta.]
 self-father-Acc every-boy-Nom like
 ‘(Lit.) Self’s father, every boy likes *t*.’

Caki-emeni-to₁ [motun-sonyen-i t₁ coahanta.]
 self-mother-also every-boy-Nom like
 ‘(Lit.) Self’s-mother-also, every boy likes *t*.’

‘For each boy *x*, *x* likes *x*’s father, and *x* likes *x*’s mother_F, too.’

(31) Motun-sonyen-ul₁ [caki-apeci-ka t₁ coahanta.]
 every-boy-Acc self-father-Nom like
 ‘(Lit.) Every boy, self’s father likes *t*.’

Motun-sonyen-ul₁ [caki-emeni-to t₁ coahanta.]
 every-boy-Acc self-mother-also like
 ‘(Lit.) Every boy, self’s-mother-also likes *t*.’

‘For each boy *x*, *x*’s father likes *x*, and *x*’s mother_F likes *x*, too.’

What is more interesting is that this ordering restriction holds only of scrambled sentences. There is no such restriction in sentences with base order. Whether a functional term precedes a *to*-phrase that contains an individual, or an individual term precedes a *to*-phrase that contains a function, the sequences form a felicitous discourse.

- (32) **Motun-sonyen-i** **caki-emeni-lul** coahanta.
 every-boy-Nom self-mother -Acc like
 ‘Every boy likes his mother.’

Motun-sonyen-i **Mary-to** coahanta.
 every-boy-Nom Mary-also like
 ‘Every boy likes Mary, too.’

‘For each boy x , x likes x ’s mother, and x likes $Mary_F$, too.’

- (33) **Motun-sonyen-i** **Mary-lul** coahanta.
 every-boy-Nom Mary-Acc like
 ‘Every boy likes Mary.’

Motun-sonyen-i **caki-emeni-to** coahanta.
 every-boy-Nom self-mother-also like
 ‘Every boy likes his mother, too.’

‘For each boy x , x likes Mary, and x likes x ’s mother_F, too.’

The fact that (32) is a good discourse is not surprising. We saw in section 3.4.1 that the second sentence of (32) has a weak reading, which does not require someone whom every boy likes. What is surprising is the felicity of (33). Contrast this with (28). Once the

scrambled phrases are back to their original positions, the infelicity has disappeared.⁹¹ This suggests that the *to*-phrase that contains a functional term triggers different presuppositions depending upon whether it is scrambled or not. Apparently, the requirement becomes stronger in the scrambled case.

3.4.4 Summary of the Section

This section presented three generalizations regarding the scopal behavior of the *to*-phrase. First, the scrambled *to*-phrase reconstructs only when the preceding context provides a functional term in a position parallel to the *to*-phrase (the anti-reconstruction effect). Second, a QP scrambled across the *to*-phrase reconstructs unless the preceding context provides a functional term (the reconstruction effect). Third, the *to*-phrase that contains a functional term triggers a stronger presupposition in scrambled sentences; thus an individual term in the preceding discourse cannot satisfy the presupposition of the *to*-phrase that contains a functional term.

3.5 Ingredients

This section introduces the three components of the analysis, based on which I account for the scope facts presented in section 3.4. The three components are an anaphoric view of the additive particle (section 3.5.1), division of labor between semantic and syntactic binding (section 3.5.2), and principles of economy that regulate covert operations such as reconstruction and type shifting (section 3.5.3). In the subsequent three sections, I discuss how each of them is motivated.

⁹¹ If there is no scrambling in (29), the second sentence becomes ungrammatical due to a WCO violation. Given that the base order sentences are ungrammatical to start with, we cannot construct a felicitous discourse that corresponds to the infelicitous discourse in (29).

3.5.1 The Anaphoric View of the Additive Particle

This section first discusses a well-known problem of the existential view of the additive particle (Karttunen and Peters 1979), and then proposes a particular implementation of an anaphoric view, building on Heim (1992). The problem, first pointed out by Kripke (1990), is concerned with English *too*, but it carries over to Korean *to* as well.⁹²

Additive particles are often said to trigger an existential presupposition, as has been assumed in the discussion so far. Sentence (34a) is thus said to presuppose (34b).

- (34) a. Mary-to Boston-ey salkoissta.
 Mary-also Boston-in live
 ‘Mary_F lives in Boston, too.’

- b. $\exists x[x \neq \text{Mary} \ \& \ \text{live_in_Boston}(x)]$

A closer look, however, tells us that the existential presupposition in (34b) is too weak to license the additive particle, and that something more specific is required. The problem is the following: we all know that many people live in Boston, thus the presupposition in (34b) is trivially satisfied. Independent of this, we also know that cooperative hearers are able to add uncontroversial information to the conversational background. This is the process called *accommodation* (see Lewis 1979, Stalnaker 1972, von Stechow 2000, and Beaver 2001). Putting these two pieces together, it follows that if the presupposition of (34a) were simply (34b), its hearer would be able to accommodate this uncontroversial information. If that is the case, sentence (34a) is expected to be felicitous in almost any context. In particular, it will be felicitous even when no salient individual who lives in Boston is mentioned. This expectation, however, is not fulfilled. If uttered out of the blue, (34a) sounds odd and calls for further identification of the person in question (e.g. *Who else lives in Boston?*).

⁹² For more discussion on this issue, see also Soames (1989), Asher and Lascarides (1998), von Stechow (2000), Beaver (2001), van der Sandt and Geurts (2001), and Suzuki (2003) among others.

This is in a clear contrast with the presupposition of definite descriptions, where accommodation works as expected:

(35) I am sorry that I am late. I had to take my daughter to the doctor.

(von Fintel 2000: 3)

This sentence can be appropriately uttered even when the speaker does not explicitly mention that he has a daughter. The hearer would take for granted without much objection that the speaker has a daughter. If the presupposition of the additive particle were simply existential, the same process of accommodation would take place in (34a), and there would be no contrast as noticed here. This is clearly not the case.

To solve this problem, an anaphoric view has been proposed, according to which the presupposition of additive particles is similar to that of pronouns in that both of them demand an antecedent in the context. This captures the fact that that when uttered out of the blue, pronouns also resist accommodation. Heim (1992), in particular, assumes that the additive particle is sort of like *in addition to x*, where *x* is an anaphoric element whose reference is disambiguated at LF by means of a referential index. Under this approach, the presupposition of (36a) is represented as in (36b).

(36) a. Mary-to₁ Boston-ey salkoissta.
 Mary-also Boston-in live
 ‘Mary_F lives in Boston, too.’

b. $g(1) \neq \text{Mary} \ \& \ \text{live_in_Boston} \ (g(1))$

Note that the additive particle carries an index. The value of the index is determined by a variable assignment function *g*, which is in turn determined by the utterance context. The function *g* is a partial function from indices to individuals, and in this case includes index 1 in its domain. The presupposition of (36a) is now that *g*(1) is not Mary and *g*(1) lives in Boston. The existence of the pronominal element distinguishes the anaphoric view from the existential view. The value of the pronominal element (index) depends on

the utterance context, which means without a context, the value is not determined. This explains why accommodation is difficult with additive particles.

Now turning to the particle *to*, I propose a specific implementation of Heim's approach, and define the lexical entry of *to* within this proposal. For now, we will focus on one specific case where the focused phrase is an individual, i.e. type *e* expression. I argue that the particle *to* takes three arguments: two individuals and a predicate. The first individual argument is an implicit pronoun that is provided by the context, and the second one is the focused phrase that is overtly realized next to the particle. The implicit pronoun behaves just like an overt pronoun: it requires an antecedent; it can be free, bound, or E-type; and it induces a weak crossover (WCO) violation in certain configurations. The lexical entry of the particle *to* is given in (37). Note that the particle is defined as a partial function to encode the presupposition.

$$(37) \quad \llbracket to \rrbracket = \lambda x_e. \lambda y_e. \lambda P_{\langle e, t \rangle}: x \neq y \ \& \ P(x) = 1. P(y) = 1^{93}$$

After the particle takes two individual arguments, we get the *to*-phrase, which is defined as a generalized quantifier of type $\langle et, t \rangle$ (see also Suzuki 2003). The *to*-phrase takes a predicate *P*, and the resulting sentence is defined if and only if the predicate holds of the covert argument *x*, which is different from the overt argument *y*. If defined, then the sentence asserts that the predicate holds of the overt argument *y*.⁹⁴

One natural move that follows from this entry is what I call *Type Parallelism*. The lexical entry of the additive particle requires that the two arguments *x* and *y* should have the same type.⁹⁵ In the entry in (37), this is trivially satisfied, but it becomes operative when the two arguments start out having different types. In such a case, types are adjusted to meet this condition. Specifically, the type of *y* is adjusted to be parallel to the

⁹³ Compare this to the entry of the particle under the existential view, given in (i).

(i) $\llbracket to \rrbracket = \lambda x_e. \lambda P_{\langle e, t \rangle}: \exists y[y \neq x \ \& \ P(y) = 1]. P(x) = 1$

⁹⁴ As can be seen in the entry, the particle *to* is not defined as a sentential operator, unlike English *too* (e.g. Asher and Lascarides 1998). This is due to the contrast between the two items, namely that unlike *too*, the particle *to* is always adjacent to the focused phrase.

⁹⁵ I thank Irene Heim for suggesting this line of thought.

type of x , since argument x is the first one to combine with the particle and takes precedence. If adjustments cannot be made, the structure becomes uninterpretable.

Let me give some examples here. The following sentences illustrate cases in which the implicit pronoun is a free, bound, and E-type pronoun respectively. The first sentence in each example provides a context in which the second sentence is uttered. Note that the translations of the second sentences explicitly reflect the current proposal that the additive particle takes one argument from the preceding context.

- (38) a. Mary-ka Bill-ul manassta.
 Mary-Nom Bill-Acc met
 ‘Mary met Bill.’

 Mary-ka John-to manassta.
 Mary-Nom John-also met
 ‘Mary met John in addition to Bill.’

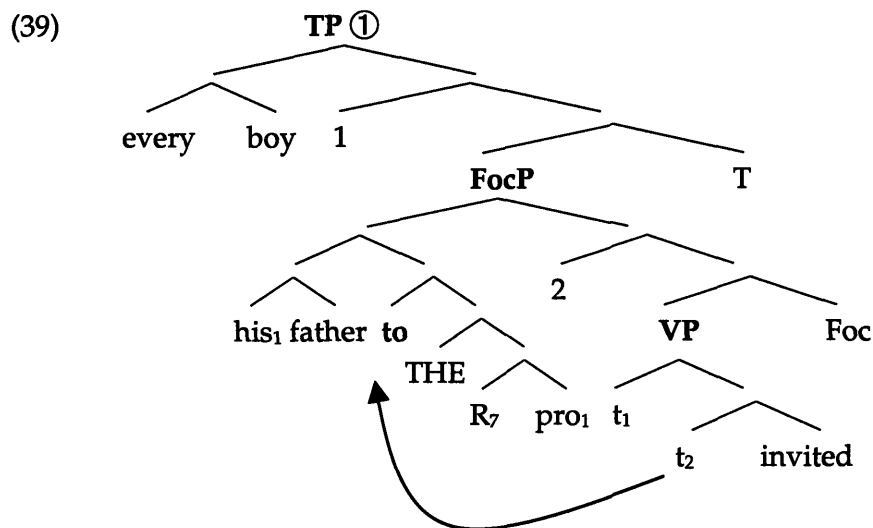
- b. Motun-sonyen-i cakicashin-ul salanghanta.
 every-boy-Nom self-Acc love
 ‘Every boy loves himself.’

 Motun-sonyen-i Mary-to salanghanta.
 every-boy-Nom Mary-also love
 ‘Every boy loves Mary in addition to himself.’

- c. Motun-sonyen-i caki-emeni-lul chotayhayssta.
 every-boy-Nom self-mother-Acc invited
 ‘Every boy invited his mother.’

 Motun-sonyen-i caki-apeci-to chotayhayssta.
 every-boy-Nom self-father-also invited
 ‘Every boy invited his father in addition to his mother.’

Let us see how these sentences are computed with the entry given in (37). I will focus on (38c), where the implicit pronoun is an E-type pronoun and most complex among the three options. Extension to the other two cases will be straightforward. The following tree represents the structure of the second sentence of (38c).



There are several points worth mentioning here. Note first that the *to*-phrase has moved to [Spec, FocP] in line with the assumption made in section 3.3.3. This is an overt movement, but due to the head-finality of Korean, the effect of this movement on word order is vacuous. With respect to semantic calculation, however, this is a welcome result. Thanks to this movement, the problem of type mismatch is resolved. Under an alternative approach that does not assume this movement, the *to*-phrase would have to move later at LF to the closest node of type *t*. That is, it will have to undergo a short QR targeting VP (Heim and Kratzer 1998). It seems that the choice between overt and covert movement does not matter for our purposes. I adopt the focus movement approach simply following the null hypothesis that I am pursuing. Note also that the focus head is positioned below TP. As already mentioned, I do not assume that FocP necessarily belongs to the CP domain. Other than its position between VP and TP, more specific position of the focus head is not specified, especially the hierarchical relation between AgroP and FocP. This is because the relative hierarchy between FocP and AgroP cannot be gathered from the order of nominal affixes, due the co-occurrence restriction (section

3.2.2). Since we assume that both the case head (Agro in this case) and the focus head are semantically vacuous, the choice on this issue does not affect the semantic computation. As for the vacuity of the focus head, recall the discussion in section 3.3.2. We concluded there that the particle carries the presupposition, and thus the focus head only functions as a licensing head, similarly to T and Agro. Next turning to the internal structure of the *to*-phrase, the first argument of *to* is a null E-type pronoun. Here I am following Heim & Kratzer's (1998) implementation of Cooper (1979), where an E-type pronoun consists of a definite article (*THE*, which is covert in Korean) and a predicate that is made of two variables. The first variable *R* is of type $\langle e, et \rangle$ and receives its value from the context. In the case in hand, it denotes a function $[\lambda x. \lambda y. y \text{ is } x\text{'s mother}]$. The second variable is of type *e* and is bound by the subject quantifier (index 1).

Now we are ready to go into the semantic calculation of (39). The semantic value of the top node of (39) is given in (40). See the appendix to check how this value is derived.

- (40) $\llbracket \textcircled{1} \rrbracket =$ is defined if and only if for each boy *x*, *x*'s mother is different from *x*'s father and *x* invited *x*'s mother. If defined, $\llbracket \textcircled{1} \rrbracket$ is true if and only if for each boy *x*, *x* invited *x*'s father.

Since the particle denotes a partial function, the sentence as a whole has a definedness condition. If the definedness condition is not satisfied, the sentence cannot be judged either true or false. It would be a usual case of presupposition failure.

To sum up, this section supported the anaphoric view of the additive particle over the existential view, and defined the lexical entry of the particle *to* that better reflects its characteristic behavior. We will see later that in addition to its resistance to accommodation, the scopal behavior of the particle *to* provides strong support to the anaphoric view.

3.5.2 Functional Dependencies and Semantic Binding

This section discusses two mechanisms that give rise to variable binding, and claims that natural languages employ both syntactic and semantic mechanisms, not just one of the two. Building on Engdahl (1986) and Sharvit (1999a), I argue that a semantic mechanism should be available to accomplish variable binding, and that this mechanism is operative in deriving a functional dependency. The discussion starts with functional dependencies in questions, and then moves to functional dependencies in scrambling sentences in Korean.

3.5.2.1 Some Background

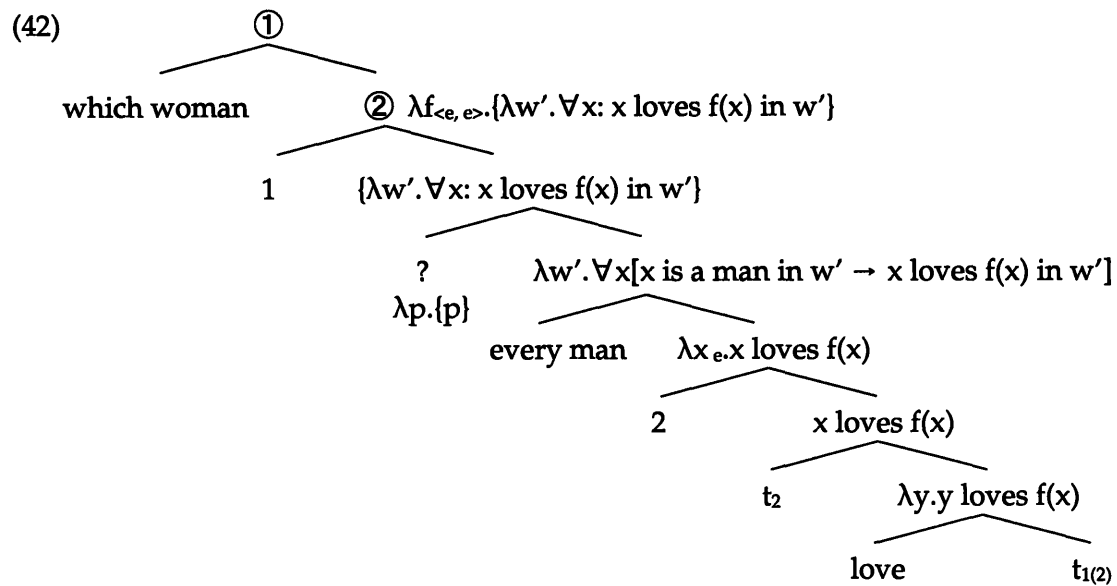
It is well known that a question like (41a) can be answered in three ways as given in (41b-d) (see among others May 1985, Engdahl 1986, Aoun and Li 1993, Chierchia 1993, and recently Agüero-Bautista 2001).

- (41) a. Which woman does every man love?
 b. Mary
 c. His mother
 d. Alex, Becki; Chris, Diana; Edward, Franny.

The answers in (41b-d) are each called individual, functional, and pair-list answers. Of the three answers, we focus on the functional answer, and derive functional readings of questions from the tools available in analyzing questions in general (e.g. Karttunen 1977).⁹⁶ One well-known proposal for this is due to Engdahl (1986) and Chierchia (1991, 1993), which propose that *wh*-phrases leave either a simple trace of type *e* or a complex trace that contains more than one variable. If *wh*-phrases leave a simple trace, we get the usual *wh*-questions that can be answered by individual answers as in (41b). By contrast,

⁹⁶ There is another question here, namely the relationship between functional readings and pair-list readings. One can argue that there is no relationship (Groenedijk and Stokhof 1984), or that the pair-list reading is a variant of the functional reading (Engdahl 1986). See Agüero-Bautista 2001 for comparison among these positions.

if they leave a complex trace, which contains a function variable, we obtain functional questions. For example, under the functional reading of (41a), the trace contains two variables. One is a functional trace of type $\langle e, e \rangle$, which is bound by the *wh*-phrase, and the other is an individual variable of type e , which is bound by the trace of the subject QP. The individual variable becomes an argument of the functional variable, and the variable complex itself is interpreted by Functional Application; thus the whole trace eventually comes out as type e , which can occur in argument positions.⁹⁷ Under the functional reading, the question in (41a) has the structure given in (42). The tree is annotated with semantic values of relevant nodes (except the top node and the *wh*-phrase). The question mark refers to the Q-morpheme posited by Karttunen (1977).⁹⁸



⁹⁷ This is an important point in that it makes the present approach distinct from semantic reconstruction assumed in literature. Cresti (1995) and Rullman (1995) argue that movement can leave a higher type trace (T of type $\langle et, t \rangle$), which makes possible for the moved phrase to take scope in the original position without being (syntactically) reconstructed to the trace position. Note that the functional trace we assume here ends with e ($\langle e, e \rangle$), and the whole trace is of type e , unlike theirs. Given this distinction between the two approaches, the fact that we adopt a complex trace does not support the semantic approach to scope reconstruction. Throughout this work, I assume that traces are of type e . Thanks to Irene Heim for discussion on this part.

⁹⁸ In order to avoid unnecessary complications due to different frameworks assumed in each paper, the discussion in this section presents Heim's (2001) implementation of Karttunen (1977) and Engdahl (1986).

Given that the functional trace is of type $\langle e, e \rangle$, the functional abstractor (index 1) is of type $\langle e, e \rangle$ as well. Accordingly, the lambda predicate in node ② is of $\langle \langle e, e \rangle, \langle \langle s, t \rangle, t \rangle \rangle$. Now in order to obtain the value of the top node, we need to combine the wh-phrase with the lambda predicate in node ②. But here we run into a problem. If *which woman* in (42) has the usual denotation of type $\langle \langle e, \langle st, t \rangle \rangle, \langle st, t \rangle \rangle$, the computation cannot proceed due to a type mismatch. We need a new entry of *which woman*.

The solution from Engdahl (1986) is the following. First, we allow a vacuous binding on predicates. For instance, *woman* comes to denote $[\lambda x. \lambda y. y \text{ is a woman}]$, where the first lambda abstractor is vacuous. Thus it denotes a relation, not a property. This mechanism becomes useful when the wh-phrase contains a bound variable, as will be shown shortly. Since the sister of *which* is of type $\langle e, et \rangle$, the entry of *which* is modified accordingly. In particular, it is defined as a kind of existential quantifier over functions of type $\langle e, e \rangle$. The new entry is given in (43a) along with the familiar one in (43b).⁹⁹ The superscripts are used to distinguish between the two entries.

- (43) a. $\llbracket \text{which}^1 \rrbracket = \lambda Q_{\langle e, et \rangle} \lambda P_{\langle ee, \langle st, t \rangle \rangle} \{ p_{\langle s, t \rangle} : \exists f_{\langle e, e \rangle} [\forall x \in \text{dom}(f) : Q(x)(f(x)) = 1 \ \& \ p \in P(f)] \}$
 b. $\llbracket \text{which}^0 \rrbracket = \lambda Q_{\langle e, t \rangle} \lambda P_{\langle e, \langle st, t \rangle \rangle} \{ p_{\langle s, t \rangle} : \exists f_e [Q(f) = 1 \ \& \ p \in P(f)] \}$

By applying (43a) to *woman*, which denotes $[\lambda x. \lambda y. y \text{ is a woman}]$, we get the denotation of *which woman*, as given in (44).

- (44) $\llbracket \text{which}^1 \text{ woman} \rrbracket^w = \lambda P_{\langle ee, \langle st, t \rangle \rangle} \{ p_{\langle s, t \rangle} : \exists f_{\langle e, e \rangle} [\forall x \in \text{dom}(f) : f(x) \text{ is a woman in } w \ \& \ p \in P(f)] \}$

⁹⁹ In fact, both (43a) and (43b) are special cases of the general *which*, which is defined as an existential quantifier over functions of type $\langle e^n, e \rangle$. The general entry of *which* is given below, where $n \geq 0$.

- (i) $\llbracket \text{which}^n \rrbracket = \lambda Q_{\langle e^{n+1}, t \rangle} \lambda P_{\langle \langle e^n, e \rangle, \langle st, t \rangle \rangle} \{ p_{\langle s, t \rangle} : \exists f_{\langle e^n, e \rangle} [\forall x_1 \in \text{dom}(f) : \forall x_2 \in \text{dom}(f(x_1)) : \dots \forall x_n \in \text{dom}(f(x_1) \dots (x_{n-1})) : Q(x_1) \dots (x_n)(f(x_1) \dots (x_n)) = 1 \ \& \ p \in P(f)] \}$

Finally, we can apply (44) to the lambda predicate in node ②. The value of the top node is given in (45); (45a) is an informal description of (45b).

- (45) a. Which woman-valued function $f_{\langle e, e \rangle}$ is such that every man x loves $f(x)$?
 b. $\{p: \exists f_{\langle e, e \rangle} [\forall x \in \text{dom}(f): f(x) \text{ is a woman in } w \ \& \ p = \lambda w'. \forall x [x \text{ is a man in } w' \rightarrow x \text{ loves } f(x) \text{ in } w']]\}$

This is the reading we want. We derived the functional reading by introducing the functional trace, which is accompanied with type adjustments of the *which*-phrase. Other than this, both individual and functional readings are derived in a parallel fashion.

Now we move one step further, and turn to functional questions where the *wh*-phrase contains a bound variable, as shown in (46a).

- (46) a. Which relative of *his* did *every boy* invite?
 b. His mother/His grandfather/...

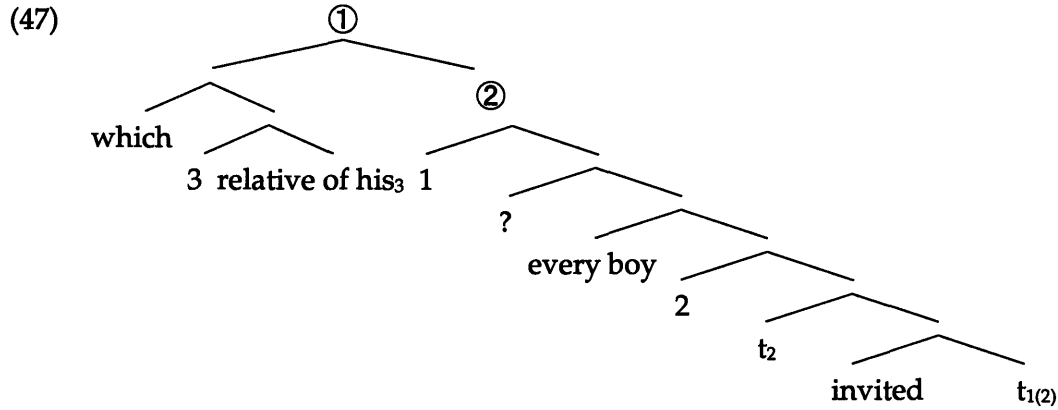
The bound variable in the *which*-phrase seems to be bound by the subject QP *every boy*. The question here is how this is possible. Given that the *which*-phrase must move to a position higher than the Q-morpheme, the surface position is too high for the pronoun to get bound. One way that quickly comes to mind is to reconstruct (part of) the *which*-phrase to the trace position, which is compatible with the standard view of binding (e.g. the binder c-commands the bindee). Although this is an advantage to the reconstruction idea, this option is not the best solution since under a particular implementation it brings in other problems. For one, it misses the *de re* reading of questions.¹⁰⁰ For others,

¹⁰⁰ If the restrictor of the *which*-phrase undergoes reconstruction, the descriptive content of the *which*-phrase is asserted rather than presupposed. However, there is an argument showing the presuppositional status of the restrictor.

- (i) John wondered which of the students are students.

This sentence does not mean that John was wondering about a tautology, which would be the case if *of the students* was evaluated inside the proposition. Rather, *which of the students* is taken as

readers are referred to Engdahl (1986: 250-251). Faced with these problems, Engdahl (1986) proposes that the bound pronoun in the restrictor of *which* can be bound in its surface position without undergoing reconstruction. Under this position, the question in (46a) is represented as in (47).



In (47), a binder index (index 3) is adjoined to the sister of *which*, which triggers Functional Abstraction. The restrictor now denotes $[\lambda x. \lambda y. y \text{ is a relative of } x]$. Unlike the case in (42), this abstraction is not vacuous due to the existence of the bound pronoun. Now the computation of (47) proceeds in the same manner as that of (42). Up to node ②, everything is the same as in (42), barring the denotation of the verb. The denotation of the *which*-phrase is given in (48a), and the value of the top node is in (48b).

(48) a. $\llbracket \text{which}^1 \text{ 3 relative of his}_3 \rrbracket^w =$

$$\lambda P_{\langle ee, \langle st, \triangleright \rangle} \{ p_{\langle s, \triangleright \rangle} : \exists f_{\langle e, e \rangle} [\forall x \in \text{dom}(f) : f(x) \text{ is a relative of } x \text{ in } w \ \& \ p \in P(f)] \}$$

b. $\{ p : \exists f_{\langle e, e \rangle} [\forall x \in \text{dom}(f) : f(x) \text{ is } x\text{'s relative in } w \ \& \ p = \lambda w'. \forall x [x \text{ is a boy in } w' \rightarrow x \text{ invited } f(x)]] \}$

the speaker's contribution and does not imply that John knows that the people under consideration actually are students (Engdahl 1986: 250).

Due to the internal binding, the pronoun is bound within the *which*-phrase (without undergoing reconstruction). Thus its apparent ‘antecedent’ (*every boy*) only binds part of the trace (index 2 of $t_{1(2)}$).¹⁰¹

¹⁰¹ Although this proposal derives the intended reading, some problems remain, as Heim (2001) points out. For example, the choice of pronoun is as if the pronoun is bound by the subject QP, which is not captured in a satisfying way under Engdahl’s proposal.

- (i) a. Which picture of herself did every girl like?
b. Which picture of her/*herself did every girl’s father like?

In (ia), the pronoun is a reflexive. The question is how it satisfies condition A, if it is bound *in situ*, or why it is exempt from it, if that is the case. The case in (ib) illustrates the same point. The choice between a pronoun and a reflexive depends upon the subject QP. In order to solve this puzzle, Heim (2001) incorporates the copy theory of movement/Trace Conversion (Fox 1999, Sauerland 2001) and a new semantics of *which*-phrase (Rullmann & Beck 1998) into Engdahl (1986). Before going to Heim’s analysis, we need to see how Trace Conversion works. Roughly speaking, Trace Conversion converts the copy of the moved phrase into a definite description plus a variable, as exemplified below.

- (ii) John invited every linguist.
Step 1: *every linguist* [John invited *every linguist*]
Step 2: every linguist λx [John invited *the x linguist*]
Step 3: $\forall x[\text{linguist}(x) \rightarrow \text{John invited } x]$

In the first step, the QP leaves a copy in the trace position. This copy undergoes Trace Conversion in the second step. In order to get to the final representation, the entry of the definite determiner is adjusted – $[\lambda x_e. \lambda P_{\langle e, t \rangle}. P(x) = 1.x]$, which results in the meaning of the sentence that arises due to the usual QR. This process applies to all determiners including *which*. Finally, Trace Conversion is also compatible with a complex trace. If the trace is of type $\langle e, e \rangle$, for instance, the variable in the copy of the moved phrase will be complex, (e.g. $f(x)$), where f is of type $\langle e, e \rangle$ and x is of type e , and the lambda abstractor will be of type $\langle e, e \rangle$, as well.

The next element of Heim’s proposal is to remove the restrictor of the *which*-phrase from the upper copy, following Rullmann & Beck (1998). Here the lexical meaning of *which* does not allow a restrictor as its sister, as can be seen from the new entries in (iii). Compare these with the ones in (43).

- (iii) a. $\llbracket \text{which}^1 \rrbracket = \lambda P_{\langle e, \langle st, t \rangle \rangle}. \{p_{\langle s, t \rangle} : \exists f_{\langle e, e \rangle} : p \in P(f)\}$
b. $\llbracket \text{which}^0 \rrbracket = \lambda P_{\langle e, \langle st, t \rangle \rangle}. \{p_{\langle s, t \rangle} : \exists f_e : p \in P(f)\}$
c. $\llbracket \text{which}^n \rrbracket = \lambda P_{\langle \langle e^n, e \rangle, \langle st, t \rangle \rangle}. \{p_{\langle s, t \rangle} : \exists f_{\langle e^n, e \rangle} : p \in P(f)\}$ (general case; $n \geq 0$)

Now let us go back to the example in (47). When Trace Conversion and new semantics of *which* are combined, this sentence undergoes the following derivation.

The same issue arises in specificational sentences, as well. Here again, variable binding is possible although the apparent binder does not c-command the bound variable (so called connectivity effects), as illustrated in (49).

- (49) a. The woman every man loves _____ is his mother.
 b. What every man enjoys most _____ is his summer vacation.
 c. The woman no man likes _____ is his mother.

In these sentences, there is no movement assumed between the underlined position and the postcopular phrase that contains a bound variable. Given this lack of movement, it is difficult in this case to argue for reconstruction of the postcopular phrase to a precopular position. Thus the c-command requirement for variable binding cannot be maintained (but see Ross 1972 and recently Schlenker 2003 for a view which maintains the c-command requirement without assuming movement structure. They argue connectivity sentences equate a concealed question with an elided answer). One alternative might be to scope the QP from the relative clause to a position where it can c-command the bound

-
- (iv) Which relative of his did everyone invite?
 Step 1: pre-movement representation
 ? every boy invited which¹ relative of his₃
 Step 2: wh-movement with copying
 [which¹ relative of his₃] ? every boy invited [which¹ relative of his₃]
 Step 3: Trace Conversion
 [which¹ relative of his₃] 7 [? every boy invited [the 7(3) relative of his₃]]
 Step 4: deletion of the upper restrictor
 [which¹] 7 [? every boy invited [the 7(3) relative of his₃]]
 Step 5: QR with a copy in the trace position (as in (50))
 [which¹] 7 [? [every boy] 3 [the 3 boy] invited [the 7(3) relative of his₃]]

Notice that in the third step, the variable within the definite description (result of Trace Conversion) is a complex trace. Accordingly, the lambda abstractor (index 7) is of type $\langle e, e \rangle$. With relevant entries, the final representation results in the following reading.

- (v) $\{p: \exists f_{\langle e, e \rangle}: p = \lambda w': \forall x [x \text{ is a boy in } w' \rightarrow f(x) \text{ is a relative of } x \text{ in } w']. \forall x [x \text{ is a boy in } w' \rightarrow x \text{ invited } f(x)]\}$

Note that under this approach, the variable *his* gets bound by the subject QP – they share the same index (index 3), which explains the problems noted above with respect to Binding Theory. The choice of the pronoun over the reflexive in (49b) is determined in the lower copy.

variable. This option, however, is not tenable, either. It not only violates the well-known locality conditions on QR, but it also wrongly predicts a stronger presupposition. This is clearer when the determiner is *no* rather than *every*. The sentence in (49c) presupposes that for every man there is some woman that he does not like. But the LF due to the long QR presupposes that for every man there is a unique woman that he likes (Dahl 1981).

Given these problems, Sharvit (1999a) and Cecchetto (2001) argue that variable binding in these sentences is possible thanks to the internal binding, which is made available by the presence of a functional dependency (see also Jacobson 1994). For example, (49a) expresses identity between two functions: the function which maps every man to the woman that that he loves is the function which maps every man to his mother. The relative operator leaves a functional trace in (49a), and the same is true of the *wh*-word in (49b). Although it is not clear why functional dependencies make the internal binding possible, the data seems enough to show that syntactic reconstruction is not the only mechanism available for variable binding. With this background in mind, we go into a functional dependency in scrambling sentences.

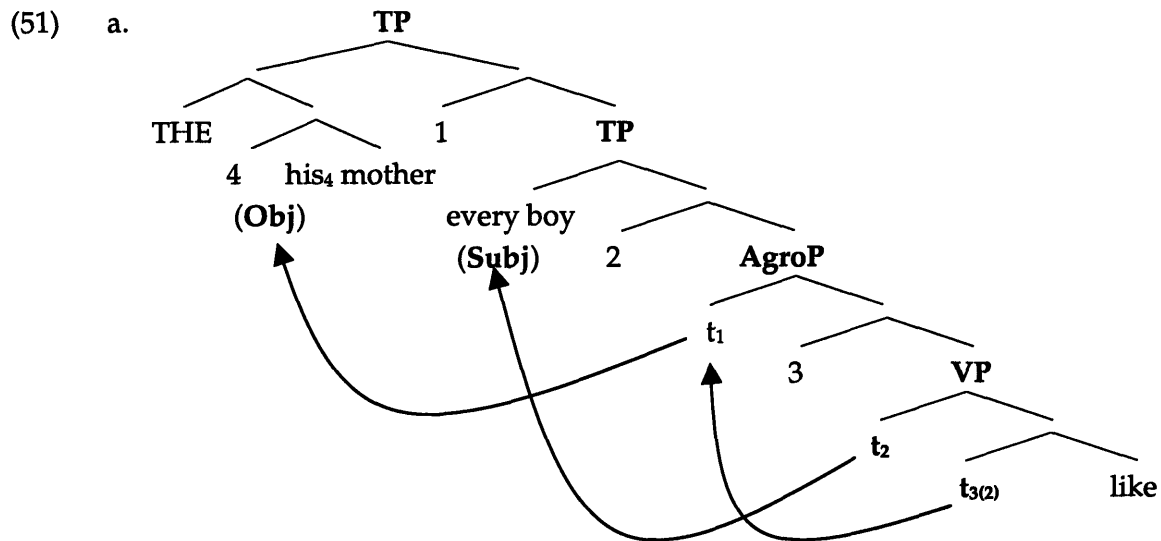
3.5.2.2 Functional Dependencies in Scrambling Sentences

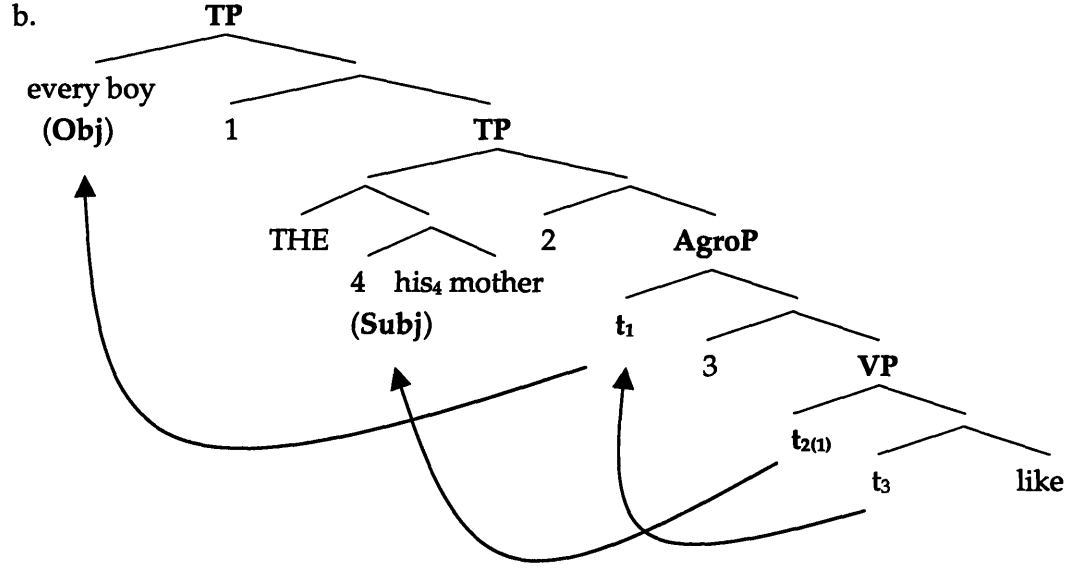
Relying on the previous discussion, I argue that variable binding in Korean is also done by two mechanisms. One is the usual syntactic binding, and the other is the semantic mechanism introduced in the previous section, namely internal binding. The focus of the discussion centers around the following two sentences.

- (50) a. **Caki-emeni-lul₁** [**motun-sonyen-i** **t₁** **coahanta.**]
 self-mother-Acc every-boy-Nom like
 ‘(Lit.) Self’s mother, every boy likes *t*, i.e. Every boy likes his mother.’
- b. **Motun-sonyen-ul₁** [**caki-emeni-ka** **t₁** **coahanta.**]
 every-boy-Acc self-mother-Nom like
 ‘(Lit.) Every boy, self’s mother likes *t*, i.e. For each boy *x*, *x*’s mother likes *x*.’

The two sentences in (50) (and their counterparts in other scrambling languages such as Hindi and Japanese) are assumed to reveal the nature of scrambling (Mahajan 1990, Saito 1992, among others). Under one common account, scrambling in (50a) is an A-bar movement and the scrambled phrase undergoes reconstruction; thus variable binding becomes possible. By contrast, scrambling in (50b) is an A-movement and the scrambled QP can bind the variable from the scrambled position. Since this scrambling is an A-movement, there is no WCO violation.

The idea that I am advancing here is that there is another mechanism that makes variable binding possible. Under this option, the scrambled phrase in (50a) does not need to reconstruct to the trace position, since the bound pronoun *caki* can be internally bound. Similarly, the scrambled QP in (50b) is not binding the pronoun, since the real binder is the binder index adjoined to the scrambled phrase. The following trees represent the structure of the two sentences under the internal binding option.





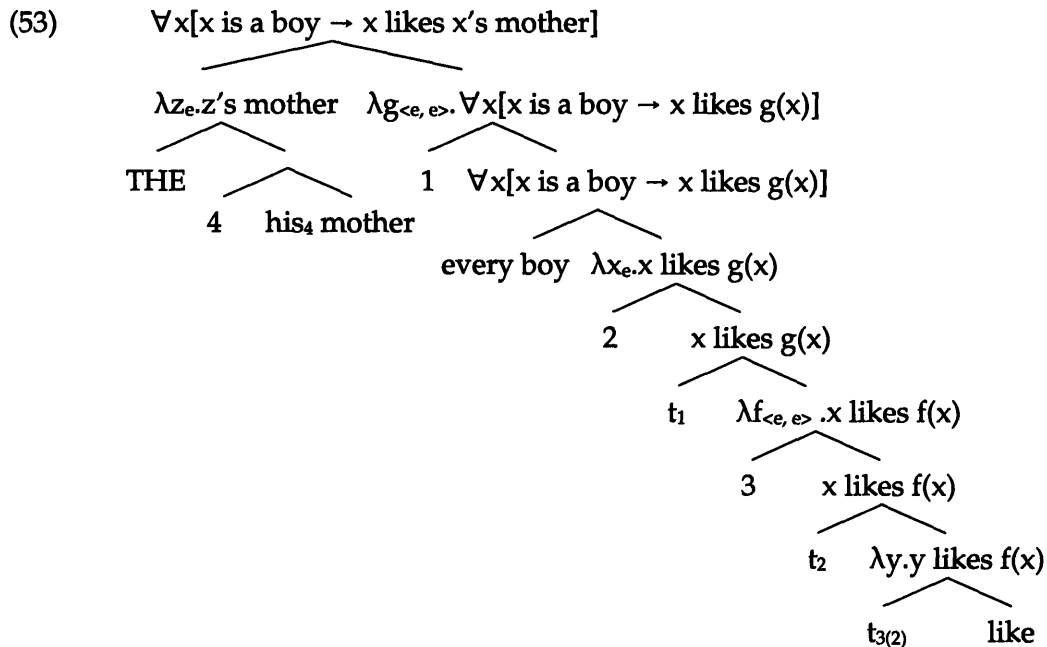
There are a few points worth mentioning here. First, the bound pronouns are internally bound, where the binder index (index 4) in both trees triggers Functional Abstraction. Due to this internal binding, *caki-emeni* 'his mother' comes to denote a function of type $\langle e, et \rangle$, namely $[\lambda x. \lambda y. y \text{ is the mother of } x]$, instead of an open individual x 's mother. To make the structure interpretable, the type of the definite article changes accordingly. Specifically, it is defined as a function from $\langle e, et \rangle$ to $\langle e, e \rangle$, which is a variant of the usual definite article of type $\langle et, e \rangle$ under the Fregean analysis. This is parallel to what is done for *which* in earlier discussion. Of the two entries given below, (52a) is the one that takes a relation as its argument; (52b) is the familiar entry; and (52c) is the generalized entry. Since Korean lacks overt articles, both definite articles are assumed to be covert.

- (52) a. $\llbracket \text{THE}^1 \rrbracket = \lambda Q_{\langle e, et \rangle} : \exists ! g_{\langle e, e \rangle} [\forall x \in \text{dom}(g) : Q(x)(g(x)) = 1] \cdot \text{if}[Q(x)(f(x)) = 1]$
 b. $\llbracket \text{THE}^0 \rrbracket = \lambda Q_{\langle e, e \rangle} : \exists ! g_e [Q(g) = 1] \cdot \text{if}[Q(f) = 1]$
 c. $\llbracket \text{THE}^n \rrbracket = \lambda Q_{\langle e^{n+1}, e \rangle} : \exists ! g_{\langle e^n, e \rangle} [\forall x_1 \in \text{dom}(g) : \forall x_2 \in \text{dom}(g(x_1)) : \dots \forall x_n \in \text{dom}(g(x_1) \dots (x_{n-1})) : Q(x_1) \dots (x_n)(g(x_1) \dots (x_n)) = 1] \cdot \text{if}[Q(x_1) \dots (x_n)(f(x_1) \dots (x_n)) = 1]$

By applying *THE* to [4 *his*₄ *mother*], we get a function that maps each individual to his or her mother ($\lambda z.z$'s *mother*). Note also that the functional terms (*caki-emeni* 'his mother') leave a complex trace that contains two variables ($t_{3(2)}$ in (51a) and $t_{2(1)}$ in (51b)). The two indices of complex traces are bound by two different elements. The function variables of type $\langle e, e \rangle$ are bound by the functional terms (*his mother*), while the individual variables of type e are bound by traces of the QP, which are in an A-position; in (51a), the individual variable (index 2 in $t_{3(2)}$) is bound by the trace of the QP in its θ -position (t_2); in (51b), the variable (index 1 in $t_{2(1)}$) is bound by the intermediate trace of the scrambled QP (t_1) in [Spec, AgroP], which I assume to be an A-position. As indicated by arrows, I assume that scrambling is a two-step movement (Mahajan 1990, Saito 1992, Sohn 1995, and Ko 2004).¹⁰² Objects first scramble to the edge of *v*P, which can be identified with case movement to the spec of AgroP. I also assume that the first step of this movement is an A-movement, while the second step can be either A or A-bar movement. Thus t_1 in (51b) qualifies as an A-binder. In order for the internal binding to be possible, the individual variable within the complex trace must be bound by the same index in an A-position. Otherwise, the internal binding is not possible. As shown in sentences like **His mother likes every boy*, subjects cannot be bound by an object in its base position. In this sense, semantic binding is not as free as one might think. Finally, the functional abstractors (indices 1 and 3 in (51a) and index 2 in (51b)) are of type $\langle e, e \rangle$.

Now we can calculate semantic values of the trees in (51). The following tree in (53) has denotations of each node of (51a). See the appendix for the computation of (51b).

¹⁰² This was assumed in the previous chapter, as well. For example, when a *man*-phrase scrambles, it always stops by [spec, ONLY-P] and [spec, AgroP].



The value of the top node shows that the internal binding leads to the same meaning that we get from syntactic binding, although the denotation of the scrambled phrase varies with the kind of binding. Specifically, if the pronoun is internally bound, the scrambled phrase in (50a) denotes a function of type $\langle e, e \rangle$, a function that maps each individual to his or her mother ($\lambda x.\iota y[\text{mother-of}'(y, x)]$). By contrast, if it undergoes reconstruction, it denotes a function from assignment functions to individuals (x 's mother). The same is true of (50b). This contrast can be illustrated in the following paraphrases. The ones in (54) are due to syntactic binding, whereas the ones in (55) are due to internal binding.

- (54) a. For each boy x , x likes x 's mother.
 b. For each boy x , x 's mother likes x .

- (55) a. The mother-function is a function f such that for each boy x , x likes $f(x)$.
 b. The mother-function is a function f such that for each boy x , $f(x)$ likes x .

Given this result, one might object by saying that it is redundant to have two mechanisms that do the same job. Although it is a fair argument, it seems that the redundant theory is needed on empirical grounds, which is one reason to object to the redundancy argument. The discussion in section 3.6.2 will show that we cannot only have syntactic reconstruction, and that both syntactic and semantic mechanisms should be available. A system that has only syntactic binding makes wrong predictions regarding discourse felicity.

This section presented the second component of the proposal, namely the availability of semantic/internal binding. I argued that semantic binding is available as an option, especially when there is a functional dependency in the sentence. Since we allow both syntactic and semantic mechanisms for variable binding, the presence of a bound variable does not always imply syntactic reconstruction. This position receives further support from recent work by Cecchetto (2001), which also argues for the independence of syntactic and semantic reconstructions and the need to adopt both mechanisms. The scopal behavior of the *to*-phrase provides more specific arguments for this claim, as will be shown shortly.

3.5.3 Principles of Economy

This section presents the third component of the analysis, namely principles of economy. I introduce two principles that control the availability of covert operations. The first one is a modified version of Fox's (2000) Scope Economy which regulates the availability of reconstruction. The second one is a well-known strategy of assigning the lowest type to an expression and using the higher type only when it is required (Partee & Rooth 1983, Partee 1986). The common theme of the two principles is that operations are not allowed without a motivation, although motivations for the two operations are different.

3.5.3.1 Reconstruction Economy

Let us start with the first principle. Fox (2000) proposes a set of economy principles, one of which is Scope Economy stated in (56).

(56) *Scope Economy*

Scope-shifting operations (SSOs) cannot be semantically vacuous. (Fox 2000:3)

Fox argues that SSOs (e.g. *optional* QR and QL/reconstruction) can apply only if it affects semantic interpretation. If there is no such semantic effect, SSOs are not licensed. The two sentences in (57) illustrate a contrast due to this restriction.

- (57) a. A boy loves every girl.
b. John loves every girl.

Sentence (57a) is ambiguous between surface ($a > \textit{every}$) and inverse scope ($\textit{every} > a$), where the inverse scope is the result of the QR that moves the object QP across the subject QP. Fox argues that this QR is licensed, since the inverse scope is semantically distinct from the surface scope. By contrast, sentence (57b), is not ambiguous, simply because there is only one scope-bearing element, namely *every girl*. Here the surface scope ($\textit{John} > \textit{every}$) and the inverse scope ($\textit{every} > \textit{John}$) are not distinct, and for this reason, QR of *every girl* across *John* is not licensed. The QP in (57b) can only move up to VP to resolve type mismatch. Fox provides arguments for this claim on the basis of the scope facts in VP-Ellipsis, details of which we do not go into here. The crucial idea to keep in mind is that SSOs are licensed only when they have semantic effects, in particular effects on truth-conditions.

Here I propose following Fox (2000) that SSOs, especially reconstruction in our case, are licensed only when they lead to different truth-conditions. In particular, I argue that no reconstruction is licensed to change presuppositions.¹⁰³ This contrasts with scrambling, which can be licensed not only by different truth-conditions but also by different presuppositions and different word orders. Although what is the driving force of scrambling is a controversial issue, when it comes to output effects, it is generally agreed that it affects truth-conditions (e.g. scrambling of QPs), information structure, or just word order with no semantic/pragmatic effect (see the discussion in section 2.5.3).

¹⁰³ I thank Danny Fox for suggesting this line of thought.

The claim here is that when a phrase is scrambled with a special purpose (other than changing truth-conditions), that phrase does not undergo reconstruction at LF as long as the two representations (one with reconstruction and the other without reconstruction) have the same truth-condition. In fact, this position is fully faithful to the spirit of economy in the following sense. Suppose that a phrase is overtly moved to induce a certain effect, e.g. to change context. If that phrase undergoes reconstruction, the effect of the overt movement is lost, but there is no gain in terms of truth-conditions, which is the intrinsic driving force of SSOs. In such a case, it is more economical not to reconstruct, everything being equal. The output effect, whatever that is, is valid, and the truth-condition remains the same.

In formulating this idea, I borrow from von Stechow (1999) a notion of entailment, which he calls Strawson-Entailment. I propose a reconstruction economy that works in conjunction with Strawson-Equivalence, which is defined with the aid of Strawson-Entailment. First, the definition of Strawson-Entailment is given in (58).

- (58) A proposition p Strawson-Entails a proposition q if and only if q is true in every possible world in which p is true and q has a truth-value.

The entailment under this notion is checked under the premise that the conclusion has a semantic value, i.e. truth-value. In order for a proposition to have a semantic value, its presuppositions must be satisfied; otherwise, the conclusion lacks a truth-value. The reasoning given in (59) exemplifies this relation.

- (59) A pug is a dog.
 Mary owns a pug.
 Mary is walking her dog.

 \therefore Mary is walking her pug.

One can easily check that this reasoning is valid. In every world in which Mary owns a pug and she is walking her dog, she is walking her pug. It is crucial here that the

presupposition of the conclusion, namely that Mary owns a pug, is in the premise. Otherwise, reasoning becomes invalid; there can be worlds in which Mary owns a chihuahua or a spaniel, and in those worlds, the conclusion is not true. This shows that *Mary is walking her dog* Strawson-Entails *Mary is walking her pug*.

Next we define Strawson-Equivalence. As equivalence is defined via entailment, so Strawson-Equivalence is defined via Strawson-Entailment. Specifically, Strawson-Equivalence is defined as mutual Strawson-Entailment of two propositions.

- (60) Propositions *p* and *q* are Strawson-Equivalent if and only if *p* Strawson-Entails *q* and *q* Strawson-Entails *p*. I.e. *p* and *q* have the same truth-value in worlds where the presuppositions of *p* and *q* are satisfied.

Now that we have a definition of Strawson-Equivalence, we can state the proposed economy principle in more precise terms. I propose the following principle:

- (61) *Reconstruction Economy*

Reconstruction is licensed only when the two resulting propositions (one with reconstruction and the other one without reconstruction) are not Strawson-Equivalent.

This is a more specific version of Fox's (2000) Scope Economy. It restricts reconstruction in the same way as Scope Economy does. That is, reconstruction is licensed only when it leads to two non-equivalent propositions. But it also has a new specification added; reconstruction is not licensed if it affects only presupposition so the two propositions are Strawson-Equivalent. This concludes the first principle of economy.

3.5.3.2 Economy Principle on Type Shifting¹⁰⁴

The second principle of economy constrains the availability of type shifting. Following Partee and Rooth (1983), I argue that each expression is assigned the lowest type among possible alternatives unless there is a motivation to assign additional higher types. When necessary, type shifting, specifically type raising, is licensed and provides an adequate higher type meaning.

The type raising under consideration is a different kind from the well-known operation LIFT proposed in Partee (1986). Partee defines LIFT as a device which turns an individual (type e) into a generalized quantifier (type $\langle et, t \rangle$) by taking all of the sets that contain that individual. For example, LIFT turns j into $\lambda P.P(j)$. The type raising operation we adopt here is responsible for an alternation between type e and type $\langle e, e \rangle$. Specifically, it turns an individual into its functional interpretation. This alternation between type e and $\langle e, e \rangle$ comes from the assumption that all expressions have a functional translation. For example, the type of *woman* is ambiguous between $\langle e, t \rangle$ and $\langle \langle e, e \rangle, t \rangle$. The one with type $\langle e, t \rangle$ is the familiar one, which refers to a set of individuals ($\lambda x.x$ is a woman). This denotation of *woman* is marked as $\llbracket \text{woman}^0 \rrbracket$ - I will use numerical superscripts to distinguish predicates of individuals and functions. The other one with type $\langle \langle e, e \rangle, t \rangle$ is a functional translation, which denotes a set of functions whose range is a subset of $\llbracket \text{woman}^0 \rrbracket$ - let's call this $\llbracket \text{woman}^1 \rrbracket$. Then, $\llbracket \text{woman}^1 \rrbracket$ denotes $\llbracket \lambda f_{\langle e, e \rangle}. \forall x \in \text{dom}(f): f(x) \text{ is a woman} \rrbracket$. Similarly, an individual term like *Mary* can denote a function of type $\langle e, e \rangle$, namely a constant function which maps all elements in the domain onto *Mary* ($\lambda x.Mary$). When multiple denotations are available for an expression, an economy principle dictates that the lower type be preferred to the higher type. I name this *Type Raising Economy*.

As mentioned at the beginning, this economy principle can be overridden when a specific need arises for higher types. One motivation suggested in Partee and Rooth (1983) and Partee (1986) is the lexical entry of conjunction. Under the assumption that only expressions of the same type are conjoinable, type raising accounts for the

¹⁰⁴ I thank Kai von Fintel and Irene Heim for suggesting the idea presented in this section.

conjoinability of lower and higher type expressions. The conjunctions in (62) illustrate such a case. In (62a), the type of an extensional verb ($\langle e, \langle e, t \rangle \rangle$) is raised to that of intensional verbs ($\langle \langle et, t \rangle, \langle e, t \rangle \rangle$). In (62b), an individual term is raised to be a generalized quantifier.

- (62) a. John needed and bought a new coat.
b. Professor Jones and every student came to the party.

By contrast, if the two conjuncts have the same type, there is no need for type raising. This is indeed the case, as illustrated in (63).

- (63) a. John caught and ate a fish.
b. Jones and Bill came to the party.

An interpretational difference between (62a) and (63a) confirms that the verbs in (63a) retain the lower type of an extensional predicate. The salient reading of (63a) involves just one fish, and thus it does not allow a paraphrase such as *John caught a fish and ate a fish*, which is compatible with there being two different fish. By contrast, (62a) does allow a paraphrase as *John needed a new coat and bought a new coat*.¹⁰⁵ A similar remark is made in Engdahl (1986) with respect to mixed answers to functional questions, where functional terms are conjoined with individual terms.

- (64) a. Q: Who does every Frenchman admire?
A: His mother and Juliette Binoche.
b. Q: Who is the female star in *The English Patient*?
A: Juliette Binoche.

¹⁰⁵ One question raised by Danny Fox is whether the position of Partee and Rooth (1983) will hold under the Generative semanticist view (or its recent manifestation by den Dikken, Larson, and Ludlow 1997) of the type of intentional predicates. I leave this for future investigation.

The question in (64a) is a functional question, given the answer *his mother*. This means that *his mother* is of type $\langle e, e \rangle$, and thus *Juliette Binoche* should be of type $\langle e, e \rangle$ as well, given the conjoinability of the two. This is possible thanks to type raising. When there is no such a motivation, the same expression *Juliette Binoche* is assigned type e , for example, as in a simple question like (64b).

Now I am proposing that the lexical entry of *to* also motivates type raising. In section 3.5.1, I argued that the lexical entry of the additive particle requires that the first two arguments of the particle *to* have the same type (*Type Parallelism*). If the two arguments have different types, types are adjusted to satisfy Type Parallelism, similarly to the conjunction case. Otherwise, the structure is not interpretable.

At first glance, type raising due to the additive particle looks just the same as the one due to conjunction. However, there is one difference between the two, namely directionality. In case of conjunction, both conjuncts have equal status. If one conjunct has a different type from the other conjunct, type raising takes place irrespective of the ordering between the two conjuncts. That is, it does not matter whether the conjunct with the higher type precedes or follows the one with the lower type. For example, in (64a), there is no contrast between *His mother and Juliette Binoche* and *Juliette Binoche and his mother*.¹⁰⁶ In either case, type raising takes place in order for conjunction to be possible. This is not the case with the particle *to*. Type Parallelism specifies that among the three arguments of the particle, the types of the first two should be equivalent. Now out of the two arguments, only the second one can undergo type raising to meet Type Parallelism. The first argument plays the role of a reference point, and is assigned the lowest type possible in conformity with the general economy principle. That is, the first argument by itself does not have a motivation for type raising. I will soon speculate why this holds, but first in order to illustrate how this works, I will reintroduce the lexical entries of the particle. The particle has multiple entries in accordance with the multiple denotations of their arguments.

¹⁰⁶ This may not be completely true. Some speakers find *His mother and Juliette Binoche* to be better than *Juliette Binoche and his mother*, and report that it is difficult to have a functional reading for *his mother* in the latter case.

- (65) a. $\llbracket \text{to}^0 \rrbracket = \lambda f_e. \lambda g_e. \lambda P_{\langle e, t \rangle}: f \neq g \ \& \ P(f) = 1. P(g) = 1$
 b. $\llbracket \text{to}^1 \rrbracket = \lambda f_{\langle e, e \rangle}. \lambda g_{\langle e, e \rangle}. \lambda P_{\langle ee, t \rangle}: f \neq g \ \& \ P(f) = 1. P(g) = 1$
 c. $\llbracket \text{to}^n \rrbracket = \lambda f_{\langle e^n, e \rangle}. \lambda g_{\langle e^n, e \rangle}. \lambda P_{\langle e^{n+1}, t \rangle}: f \neq g \ \& \ P(f) = 1. P(g) = 1$

The entry in (65a) is from section 3.5.1, where the first two arguments are of type e , and the new entry in (65b) is for cases where the two arguments are functions of type $\langle e, e \rangle$. The one in (65c) is a generalized entry. In both (65a) and (65b), there is no issue of type raising since Type Parallelism is a consequence of the entry in (65c). Type raising works in the following manner. If the second argument of $\llbracket \text{to}^1 \rrbracket$ is not a function but an individual term, the individual term should be raised to be a constant function. By contrast, if the second argument of $\llbracket \text{to}^0 \rrbracket$ is of type $\langle e, e \rangle$, there is no type raising in the first argument. One might suggest for the latter case that the type of the second argument be lowered so that both arguments can be of type e . However, this option is not feasible. Type lowering is a partial function, and is defined only for those that undergo type raising from e to $\langle e, e \rangle$. Expressions that are inherently functional (e.g. $\lambda x. x$'s mother) cannot be lowered. By contrast, type raising is a total function, and is thus defined for any individual term. This contrast between type raising and lowering is analogous to the contrast between LIFT and LOWER in Partee (1986). It is a trivial matter to define a generalized quantifier from an expression of type e , while one cannot always define an individual term from quantificational NPs of type $\langle et, t \rangle$.

In brief, the type of the first argument takes precedence over the type of the second one, and thus the type of the first argument determines the type of the second argument. If the type of the first argument is higher than that of the second one, type raising is licensed in the second argument. By contrast, if the type of the first argument is lower than that of the second argument, type raising is not licensed in the first argument. The second component may be called laziness in type raising.¹⁰⁷ Type raising is not licensed by looking ahead. It is licensed only when necessary.

Two questions arise at this point. First, why is it that the first argument of the particle takes precedence over the second one? Second, why is the additive particle

¹⁰⁷ I thank Manfred Krifka for suggesting this term.

subject to different conditions from the one that applies to conjunction, where we do not find an asymmetry between the two conjuncts? As for the first question, I believe this is due to different status of the two arguments. The first argument belongs to the presupposition, while the second one belongs to the assertion. Given that the first argument is part of the presupposition, its type is determined before that of the second argument. Simply speaking, what comes first determines what comes later. The second question receives an answer in the same context. The first and the second arguments of the particle (almost always) appear in separate sentences. When we get to the sentence that contains the additive particle, the processing of the first argument is complete. The first argument has already been assigned the lowest type, and the second argument must have the same type. This contrasts with the case of conjunction, where the two conjuncts occur within one phrase in the same sentence. Since both conjuncts have equal status, neither of the two takes precedence over the other.

To summarize, this section introduced the last ingredient of the analysis, namely two principles of economy. I proposed two economy principles, each of which is a slightly modified version of the existing principles. I first argued that reconstruction is a tool for changing assertion, but cannot be a tool for changing presupposition. I also argued that each expression is assigned the lowest type among available meanings, and additional higher type is provided by type raising. The type raising, however, is not freely licensed, but only when it is motivated by lexical entries of some expressions, one of which is the additive particle. How these principles apply to the scopal pattern of the *to*-phrase will be shown in the following section.

3.6 Deriving the Scope Pattern

Now that we have all the tools needed, we can go back to the scope facts presented in section 3.4 and account for them. This section contains four subsections. The first three address the three factors that affect the scopal behavior of the *to*-phrase: scrambling, the kind of function in the preceding context, and ordering restrictions. The final subsection (section 3.6.4) discusses alternative analyses and points out their problems.

3.6.1 Scrambling and the Scope of the *To*-Phrase

This section deals with the effects due to scrambling, which are the anti-reconstruction and reconstruction effects. For each effect, we start with the basic case with no scrambling, and then turn to the scrambled sentence.

3.6.1.1 The Anti-Reconstruction Effect

The anti-reconstruction effect arises when a *to*-phrase is scrambled across a QP. The starting point is the sentence given in (66), which has no scrambling. As indicated, this sentence is ambiguous between the weak (reading (i)) and strong reading (reading (ii)).

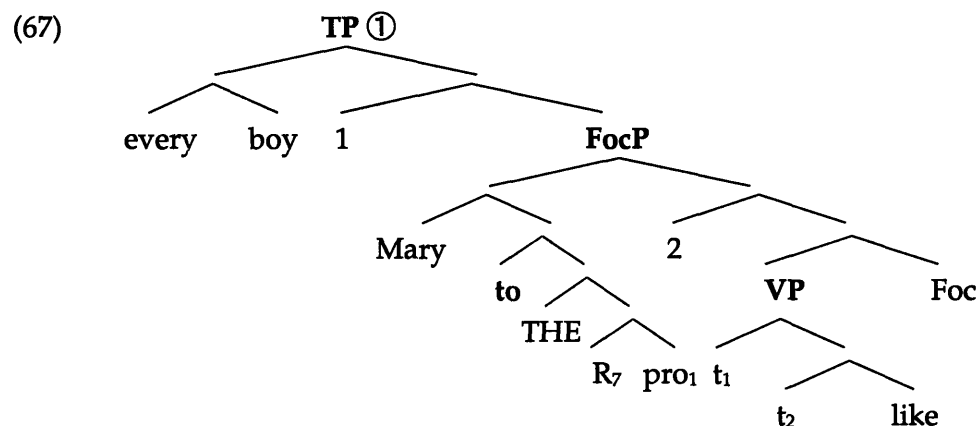
- (66) **Motun-sonyen-i** **Mary-to** **coahanta.**¹⁰⁸
 every-boy-Nom Mary-also like
 ‘(Lit.) Every boy likes Mary-also.’
- (i) For each boy *x*, there is someone other than Mary who *x* likes. (*every* > *also*)
 (ii) There is someone other than Mary who every boy likes. (*also* > *every*)

Under the anaphoric view of the additive particle, the strong reading in (ii) arises when the pronominal element, i.e. the first argument of *to*, is a free pronoun. Following the convention in Heim (1992), I represent the implicit argument as an index next to the particle. For example, in (66), *Mary-to* is represented at LF as *Mary-to*₃ for the strong reading. The utterance context provides a variable assignment function *g*, which will map index 3 to an individual given in the context. Under the strong reading, the sentence is defined iff for each boy *x*, *x* likes *g*(3) and *g*(3) is not Mary. If defined, the sentence is true iff for each boy *x*, *x* likes Mary.

The weak reading in (i) is a bit complicated since each boy can love different people. In order to derive this co-variation, the implicit pronoun must be an E-type

¹⁰⁸ Although I adopt the anaphoric view of the additive particle, I continue to represent the readings (e.g. (i) and (ii) in (66)) using existential quantification.

pronoun (see an example in 3.5.1), and *Mary-to* is represented at LF as *Mary-to_{the_R_pro}*. The whole structure of the sentence is given in (67).



Semantic computation of this sentence is straightforward, except that the value of the free variable R_7 should be determined by the assignment function. When sentence (70) is preceded by a sentence like *Every boy likes his mother*, assigning the value of R_7 is trivial. It will be $[\lambda x. \lambda y. y \text{ is } x\text{'s mother}]$. In such a case, the sentence is defined iff for each boy x , x likes x 's mother and x 's mother is not Mary. If defined, the sentence is true iff for each boy x , x likes Mary. A more interesting case is the one where this sentence is preceded by a pair-list, as illustrated in (68).

- (68) Alex-ka Becki-lul, Chris-ka Diana-lul, Edward-ka Franny-lul coahanta.
 Alex-N Becki-A Chris-N Diana-A Edward-N Franny-A like
 'Alex likes Becki, Chris likes Diana, and Edward likes Franny.'

Motun-sonyen-i Mary-to coahanta.
 every-boy-Nom Mary-also like
 '(Lit.) Every boy likes Mary-also.'

The weak reading is allowed here, although there is no single expression that can denote the variable R . What could be the value of R_7 in this context? I argue that the pair-list in

the preceding context invokes a function, which is defined extensionally (Engdahl 1986, Chierchia 1991). This function will serve as a value of R_7 .

(69) $g(7) = \{ \langle \text{Alex, Becki} \rangle, \langle \text{Chris, Diana} \rangle, \langle \text{Edward, Franny} \rangle \}$

Given this value of R_7 , it is easy to compute the meaning of this sentence: the sentence is defined iff for each boy x , Mary is not the one who is in the R_7 -relation with x , and x likes the one who is in the R_7 -relation with x . If defined, the sentence is true iff for each boy x , x likes Mary.

The next case to look at is the scrambled version of (66), given in (70).

(70) Mary- to_1 [motun-sonyen-i t_1 coahanta.]

Mary-also every-boy-Nom like

‘(Lit.) Mary-also, every boy likes t .’

(i) *For each boy x , there is someone other than Mary who x likes. (**every > also*)

(ii) There is someone other than Mary who every boy likes. (*also > every*)

This sentence exhibits the anti-reconstruction effect. That is, the scrambled *to*-phrase does not reconstruct, and thus the ambiguity of (66) has disappeared. Since the strong reading is the only reading available, the sentence does not form a felicitous discourse with a preceding pair-list.

In explaining the anti-reconstruction effect, we appeal to an economy principle introduced in the previous section, namely Reconstruction Economy. What it says is that reconstruction is not allowed if it only affects presuppositions. Reconstruction must have effects on truth-conditions. How this principle applies to the current case becomes clear, if we compare the assertions and presuppositions of the weak and strong readings.

(71) The Weak Reading

a. Assertion: Each boy likes Mary.

b. Presupposition: Each boy likes someone other than Mary.

(72) The Strong Reading

- a. Assertion: Each boy likes Mary.
- b. Presupposition: There is someone other than Mary whom every boy likes.

As one can see, the two readings have different presuppositions, but have the same assertion. Since reconstruction only cares about assertion, reconstruction cannot be licensed in (70). The two readings are Strawson-Equivalent to each other.

Recall here that possible readings of the sentences containing the particle *to* depend on which options (among free, bound, and E-type pronouns) are available for the pronominal within the additive particle. Now that the *to*-phrase in (70) has to be interpreted in the scrambled position, bound and E-type pronouns are ruled out in this configuration. The bound pronoun or the bound pronoun within the E-type pronoun cannot be bound by the subject QP in the scrambled position. In particular, the impossibility of the E-type pronoun explains the absence of the weak reading. Naturally, a free pronoun is the only option available. At LF, *Mary-to* is represented as *Mary-to_s*, and the sentence is defined iff for each boy *x*, *x* likes *g(5)* and *g(5)* is not Mary. If defined, the sentence is true iff for each boy *x*, *x* likes Mary. This accounts for why the sentence is not felicitous following a pair-list, since it does not provide a particular individual that every boy likes.

Given this account based on Reconstruction Economy, one prediction follows, namely that if the *to*-phrase contains an element that has effects on truth-conditions, reconstruction should become possible.¹⁰⁹ If the *to*-phrase contains a quantificational element instead of a referential expression, the proposition due to reconstruction is not Strawson-Equivalent to the proposition where there is no reconstruction. This prediction is borne out, as illustrated in the following example adapted from Park (2002).

¹⁰⁹ I thank Danny Fox and Shoichi Takahashi for bringing this prediction to my attention.

(73) A: Motun-sonyen-i enu-paywu-lul coahay.
 every-boy-Nom some-actor-Acc like
 ‘(Lit.) Every boy likes some actor.’

(i) For each boy *x*, there is an actor that *x* likes.

(ii) There is an actor that every boy likes.

B: Enu-[kaswu]_F-to₁ [motun-sonyen-i t₁ coahay.]
 some-singer-also every-boy-Nom like

(i) For each boy *x*, there is a singer (in addition to an actor) that *x* likes.

(ii) There is an actor (in addition to an actor) that every boy likes.

In B’s utterance, the *to*-phrase contains a QP where focus is on the predicative noun.¹¹⁰ Depending upon how A’s utterance is interpreted in the context, B’s utterance varies. Specifically, the scope relations should be parallel in the two utterances (see Park 2002 for more discussion about this). Details aside, the point of (80) is that when the *to*-phrase contains a scope-bearing element, reconstruction becomes possible. That is, the sentence allows ambiguity, unlike the case where the *to*-phrase contains a referential expression and exhibits the anti-reconstruction effect. Therefore, this case provides an argument for Reconstruction Economy.

Before closing this section, we have to discuss another mechanism of variable binding, namely semantic binding. If the implicit variable within the E-type pronoun can be bound in the scrambled position by internal binding, the anti-reconstruction effect should not hold. There seem to be two possibilities here. The first one is to restrict internal binding to overt variables such as *caki*, so that this option may not arise to begin with. However, it is not clear why this should be the case. The second option that I endorse here is that even though semantic binding is possible for covert variables, some other reason rules out a pair-list as a felicitous preceding context. As mentioned already,

¹¹⁰ Since focus is only on the noun, we have to revise the entry of the particle so that predicative noun (or the whole QP) can be an argument of *to*, as well. Since this issue is not directly relevant to discussion at this point, I will focus on the available reading rather than on how to derive them compositionally.

under semantic binding, the scrambled phrase is interpreted as a function of type $\langle e, e \rangle$. This means that both *Mary* and the preceding pair-list in (70) should be a function. Now the problem is that the pair-list is a function that is defined only extensionally and has no corresponding functional expression of type $\langle e, e \rangle$. As will be introduced in section 3.6.2, the additive particle requires a linguistic antecedent in the preceding context, and the pair-list does not satisfy this requirement.

3.6.1.2 Digression: The Problem of the Formal Link

Related to the account just given, one question arises, namely whether we can justify the use of an E-type pronoun in the context of a pair-list which does not provide an NP antecedent. It is well noted in the literature that E-type pronouns require an explicit NP antecedent. This is dubbed the problem of the formal link (Kadmon 1987, Heim 1990). The following examples from Heim (1990) illustrate the issue.

- (74) a. Every man who has a wife sits next to **her**.
 b. *Every married man sits next to **her**.
- (75) a. John has a wife. **She** is sitting next to him.
 b. John is married. ??**She** is sitting next to him.

Whether it is an E-type pronoun or a referential pronoun, pronouns seem to require an NP antecedent in the preceding context. In (74), uttering *man who has a wife* makes the wife-function salient, while uttering *married man* does not. Thus (74b) – unlike (74a) – cannot mean that for each x such that x is a married man, x sits next to the unique y such that y is married to x . If it is really the context that provides the value of R within the E-type pronoun, as Cooper (1979) argues, we expect no difference between (74a) and (74b). Similarly in (75), uttering *John has a wife* makes John's wife salient enough to be referred to by *she*, whereas uttering *John is married* does not. In short, in order for a pronoun to be appropriate, there seems to have to be a syntactic antecedent so that a “formal link” can be established between the pronoun and the antecedent. Under this position, (74b) is

bad because there is no antecedent to which the pronoun can be linked. This kind of contrast led to a syntactic approach (Evans 1977 and recently Elbourne 2002) that argues against an approach that relies heavily on the context.

Now if the contrast in (74 - 75) is indeed due to the (un)availability of an NP antecedent, and if pronouns cannot be used in the absence of an NP antecedent, the proposed analysis runs into a problem. How is it that a pair-list seems to provide a value for R, although it does not provide an NP antecedent. As an answer to this question, I argue that pronouns in Korean (unlike English) are a deep anaphor in the sense of Hankamer & Sag (1976).¹¹¹ As such, they do not require a linguistic antecedent and the value of the anaphor is recoverable from the pragmatic environment. One supporting example is given below.

(76) Na taum-tal-ey kyelhonhay.
 I next-month-at get_married
 'I am getting married next month.'

(Ku-nun) chinhan-chinkwu-uy oppa-i-ya.
 He-Top close-friend-Gen brother-be-Decl
 'He/The man I am marrying is a brother of my close friend.'

In (76), the use of the pronoun is licit without an NP antecedent. This shows that the presence of an NP antecedent is not a requirement, and that the discourse context alone can license a pronoun. Note that the pronoun can be null, given that Korean is a pro-drop language.

Then, what about E-type pronouns? Can they also occur without an antecedent? This seems to be the case. The following discourse shows that E-type pronouns are possible in the context of a pair-list.

¹¹¹ I thank Shoichi Takahashi for discussion on this part.

- (77) Alex-ka Becki-lul, Chris-ka Diana-lul, Edward-ka Franny-lul coahanta.
 Alex-N Becki-A Chris-N Diana-A Edward-N Franny-A like
 'Alex likes Becki, Chris likes Diana, and Edward likes Franny.'

Alex-nun kunye-wa kyelhonha kosipehanta.
 Alex-Top she-with get_married want
 'Alex wants to marry her.'

Unlike in English (the translated sentence is not felicitous in English), the utterance of a pronoun is appropriate in this context, and the pronoun *kunye* 'her' refers to Becki, the one whom Alex likes. Thus it seems that here again, the pair-list in the preceding context can provide the value of R within the E-type pronoun, where R is defined extensionally. At the same time, it seems that the pronoun in (77) cannot be a free pronoun. If it were, speakers would find it difficult to decide whom the pronoun refers to, since there are three women in the context. Thus (77) supports the present position that E-type pronouns in Korean are possible without an NP antecedent, unlike those of English. Based on this, we conclude that the E-type pronoun analysis is tenable for the weak reading of (66).

3.6.1.3 The Reconstruction Effect

Now we turn to the reconstruction effect, which arises when a QP in the object position is scrambled across the *to*-phrase in the subject position. As before, we start with the sentence with the basic word order.

- (78) Mary-to motun-sonyen-ul coahanta.
 Marr-also every-boy-Acc like
 '(Lit.) Mary-also likes every boy.'
- (i) There is someone other than Mary who likes every boy. (*also* > *every*)
 (ii) *For each boy x, there is someone other than Mary who likes x. (**every* > *also*)

As mentioned already, this sentence is unambiguous. It only allows the strong reading. The account of the lack of ambiguity is straightforward. Among the three options that the pronominal within the *to*-phrase can take, only the free pronoun is a viable choice. Since the object quantifier cannot bind the pronominal in the subject position, both bound and E-type pronouns are ruled out. Assuming index 4 for the implicit pronoun, the sentence is defined iff $g(4)$ is not Mary and $g(4)$ likes every boy. If defined, the sentence is true iff Mary likes every boy.

The reconstruction effect arises when the object QP is scrambled across the *to*-phrase, as illustrated in (79).

- (79) **Motun-sonyen-ul₁** [Mary-**to** t_1 coahanta.]
 every-boy-Acc Mary-also like
 ‘(Lit.) Everyboy, Mary-also likes t .’
- (i) There is someone other than Mary who likes every boy. (*also* > *every*)
- (ii) *For each boy x , there is someone other than Mary who likes x . (**every* > *also*)

The reconstruction effect refers to the obligatory reconstruction of the scrambled QP. Since the scrambled QP can take scope in the scrambled position, we expect the weak reading in (ii) to be available in (79). Especially, under the principle of economy that I am arguing for, the QP must take scope in the surface position. The weak and strong readings are Strawson-Equivalent to each other, and thus there is no motivation for the QP to reconstruct. Given this reasoning, this sentence seems to be a problem for the proposed analysis.

I argue, however, that this problem is only apparent. On the contrary, this case supports the anaphoric view of the additive particle in contrast to the existential view. The idea I put forward is that the lack of the weak reading in (79) is due to a WCO violation. In order for the weak reading to be possible, the pronominal element within the *to*-phrase must be either a bound or an E-type pronoun. Yet, both options trigger a WCO violation, since the QP undergoing scrambling “crosses-over” its bindee, namely the implicit argument of the particle (see also Jacobson 1977, Chierchia 1991, 1993, Büring 2004 for cases where implicit variables induce WCO violations). Behind this

reasoning lies an assumption that scrambling across the *to*-phrase is an A-bar movement. I assume that object scrambling, more precisely the second step of object scrambling, can be either A or A-bar movement, but scrambling across the *to*-phrase is always an A-bar movement. In the overt syntax, the *to*-phrase is in the spec of FocP or has already passed by that position. Therefore, scrambling across this position becomes an A-bar movement. The schematic structures in (80) illustrate how this works.

- (80) a. [every boy₁ [[Mary-to-x₁] t₁ likes]]¹¹²
 b. [every boy₁ [[Mary-to-the_R_x₁] t₁ likes]]

Variable binding is possible from c-commanding A-positions (Reinhart 1983, Buring 2004), and the scrambled QP in (80) does not qualify as an A-binder. Now that the two options (out of three) are ruled out, the only option remaining is the pronominal being a free pronoun, as shown in (81). Of course, this is not a WCO configuration.

- (81) [every boy₁ [[Mary-to-y₃] t₁ likes]]

Sentence (79) under the structure in (81) is defined iff *g*(3) is not Mary and *g*(3) likes every boy. If defined, the sentence is true iff Mary likes every boy. This is the strong reading. Notice that the strong reading is derived although the QP is interpreted in the scrambled position. A free pronoun is a referring expression, and as such there is no scopal interaction between the QP *every boy* and the *to*-phrase. Whether the scrambled QP reconstructs or not, we get the same reading. This shows that the scrambled QP does not have to undergo reconstruction in order for the strong reading to be available. The strong reading is not due to the obligatory reconstruction of the QP, but due to the implicit argument being a free pronoun. Given this, the name ‘reconstruction effect’ is a misnomer. Now it follows naturally that a pair-list preceding (79) does not form a felicitous discourse. The pair-list does not provide a salient individual that will serve as an antecedent of the free pronoun.

¹¹² Although I am assuming that object scrambling is a two-step movement, this structure does not represent the first step of scrambling (section 3.5.2). The first step is an A-movement, thus it does not matter for the issue of WCO.

At the same time, this case provides an argument against the existential view. Under the existential view, there is an existential quantifier within the *to*-phrase. Thus sentence (79) is expected to have the following interpretation.

- (82) The sentence is defined iff for each boy x , there is some y such that y is not Mary and y likes x . If defined, the sentence is true iff for each boy x , Mary likes x . That is, for each boy x , there is someone other than Mary who likes x .

As we know, this reading is not available for (79). If it were, (79) would be felicitous following a pair-list, since a pair-list satisfies the definedness condition. Furthermore, under the existential view, the weak reading must be the only reading available, since the QP does not reconstruct in line with the economy principle. Then, in order to derive the strong reading, the existential view has to stipulate that the scrambled QP somehow obligatorily reconstructs in violation of the economy principle. Once we do so, however, we lose the account of the anti-reconstruction effect in (70). By contrast, the anaphoric view can derive the strong reading without real reconstruction of the object QP. This is another argument (in addition to the difficulty of accommodation) which shows that the anaphoric view is superior to the existential view. The anaphoric approach rules out the weak reading by appealing to WCO, and derives the strong reading without violating the economy principle, whereas the existential view needs a stipulation that requires a reconstruction, which incurs a violation of the economy principle.

3.6.2. The Role of Context: Pair-Lists vs. Natural Functions

This section presents an account of the effect due to the preceding context. I showed in section 3.4.2 that in some cases, specifically if the preceding context provides a natural function instead of a pair-list, both reconstruction and anti-reconstruction effects seem to disappear. First, see the contrast between (83) and (84).

- (83) Becki-lul Alex-ka, Diana-lul Chris-ka, Franny-lul Edward-ka coahanta.
 Becki-A Alex-N Diana-A Chris-N Franny-A Edward-N like
 ‘(Lit.) Becki, Alex likes *t*, Diana, Chris likes *t*, and Franny, Edward likes *t*.’

#Mary-to₁ [motun-sonyen-i t₁ coahanta.]
 Mary-also every-boy-Nom like
 ‘(Lit.) Mary-also, every boy likes *t*.’

- (84) Caki-emeni-lul₁ [motun-sonyen-i t₁ coahanta.]
 self-mother-Acc every-boy-Nom like
 ‘(Lit.) Self’s mother, every boy likes *t*.’

Mary-to₁ [motun-sonyen-i t₁ coahanta.]
 Mary-also every-boy-Nom like
 ‘(Lit.) Mary-also, every boy likes *t*.’

‘For each boy *x*, *x* likes his mother, and *x* likes Mary_F, too.’

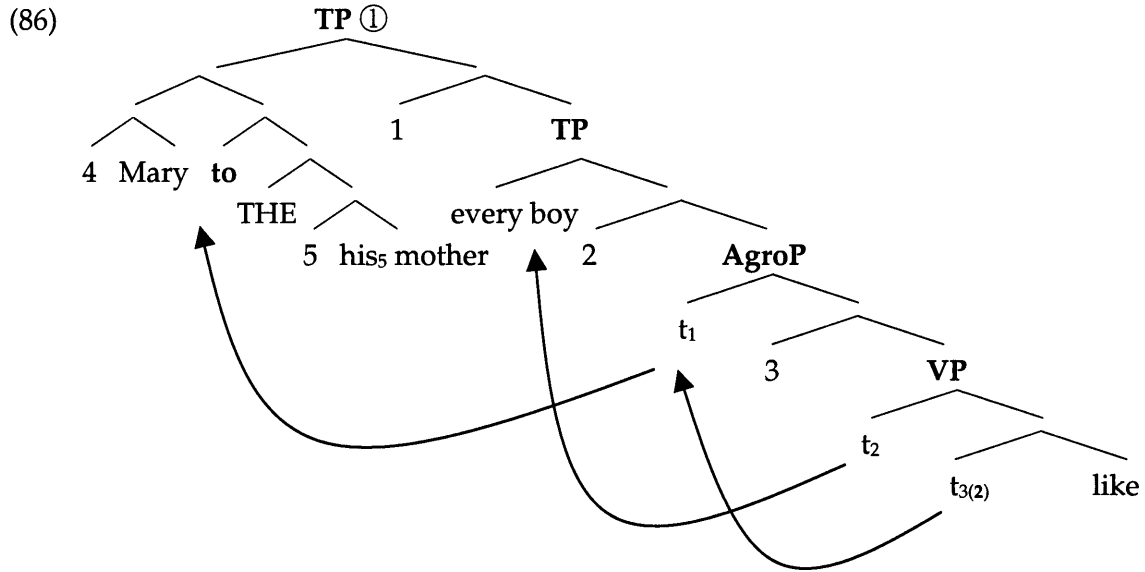
The discourse in (83) illustrates the anti-reconstruction effect. In the second sentence of (83), the scrambled *to*-phrase does not reconstruct, and only the strong reading is available. Since the preceding pair-list does not satisfy the presupposition of the strong reading, this discourse is not felicitous. The discourse in (84), by contrast, is felicitous although there is no one whom every boy likes and thus it is expected to be infelicitous. One might suggest that the *to*-phrase somehow reconstructs in this case, because of the bound-variable in the preceding context. This is a possible analysis, but it runs into a problem once more data is taken into account (see section 3.6.4 for the problem of this alternative account).

The account I am advancing here is that the phrase *caki-emeni* ‘his mother’ in (84) invokes a natural function, and this explains the seeming reconstruction of the *to*-phrase without adopting real reconstruction. Let’s be more specific. In the first sentence of (84), *caki-emeni* ‘his mother’ is interpreted as a function of type $\langle e, e \rangle$ (due to semantic

binding). This function of type $\langle e, e \rangle$ becomes the first argument of the particle *to*. In order to meet Type Parallelism, then, *Mary* in the second sentence of (84) undergoes type raising, again due to internal binding. It denotes a constant function, which maps all elements in the domain onto Mary ($\lambda x.Mary$). This type raising is licit since it has a motivation. Under this option, the discourse is informally read as follows.

- (85) The mother-function is a function f such that each boy x likes $f(x)$.
The Mary-function is a function g such that each boy x likes $g(x)$ in addition to $f(x)$.

Note that the weak reading/co-variation is due to type raising of *Mary* and *caki-emeni* 'his mother', not to their reconstruction. The following tree represents the structure of the second sentence of (84) in this context.



Since the first two arguments of the particle are functional terms, the entry of *to* is adjusted to be compatible with that. The entry is repeated from section 3.5.3.

- (87) $\llbracket to^1 \rrbracket = \lambda f_{\langle e, e \rangle} . \lambda g_{\langle e, e \rangle} . \lambda P_{\langle ee, t \rangle} : f \neq g \ \& \ P(f) = 1 . P(g) = 1$

Now the value of the top node is given in (88). See the appendix for details.

- (88) $\llbracket \textcircled{1} \rrbracket$ is defined if and only if $\lambda y_e.y$'s mother $\neq \lambda y_e.$ Mary & for each boy x , x likes x 's mother. If defined, $\llbracket \textcircled{1} \rrbracket$ is true if and only if for each boy x , x like's Mary.

In (88), one of the definedness conditions is that the two functions, namely the mother-function and Mary-function are different. One might think that this condition is not strong enough, since Mary may not stand in the mother-relation to any boy in a context.¹¹³ If so, simply saying that the two functions are different may be too weak, since two functions are different whenever there is at least one input for which the values defined by the functions are different. We might need to require that for each boy x , the value of the mother-function applied to x is different from the value of the Mary-function applied to x . I believe, however, that we do not need a stronger condition here. In some contexts, Mary can indeed be some boy's mother, as the value in (88) allows. Imagine a context where one of the boys happens to be Mary's son and. For her son, the value of the mother-function and the value of the Mary-function are one and the same. In this context, one can still felicitously utter (84).

Two questions arise at this point. The first question is concerned with the other mechanism for variable binding, namely syntactic reconstruction. Specifically, why is it that we opt for the internal binding in (84)? What goes wrong if the phrase *caki-emei* 'his mother' undergoes syntactic binding (via reconstruction) instead of semantic binding? Second, we assumed that *Mary* in (84) is type-raised due to the preceding functional term. If so, why is type raising not possible in (83) where the preceding context is a pair-list, which is also a kind of function? Let's look at each of these in turn.

If *caki-emeni* 'his mother' reconstructs for syntactic binding, it is interpreted as a bound variable individual rather than a function. Since the phrase *caki-emeni* 'his mother' eventually denotes an individual, there is no reason for *Mary* in the following sentence to be type-raised. It will be an individual term of type e . Now if this is combined with the fact that the scrambled *to*-phrase does not reconstruct (the anti-

¹¹³ Thanks to Jon Gajewski for pointing this out to me.

reconstruction effect), the problem becomes evident. The second sentence only has the strong reading, and thus requires there to be someone other than Mary whom every boy likes. The problem is that under the option of syntactic binding, the preceding context does not satisfy this requirement. Therefore, the discourse is expected to be bad due to a presupposition failure, contrary to fact.

This reasoning receives further support in the following example, where the first sentence does not have scrambling. The first sentence in (89) would have the same LF representation as the first sentence of (84) under the reconstruction option. Unlike (84), this discourse is not felicitous, which confirms that syntactic binding does not account for the felicity of (84).

- (89) **Motun-sonyen-i** **caki-emeni-lul** coahanta.
 every-boy-Nom self-mother-Acc like
 ‘(Lit.) Self’s mother, every boy likes *t*.’
- #Mary-to₁ [motun-sonyen-i t₁ coahanta.]
 Mary-also every-boy-Nom like
 ‘(Lit.) Mary-also, every boy likes *t*.’

Given the current account, this case provides an argument against variable binding via syntactic reconstruction. It does not argue against syntactic binding in general, but it is enough to show that we cannot only have syntactic binding. We need semantic binding, as well.

Finally, in order to complete this argument, we have to answer why *caki-emeni* ‘his mother’ cannot be interpreted as a function in its base position.¹¹⁴ If it were possible, there would be no presupposition failure in (84) under the option of syntactic binding. Similarly, the discourse in (89) would be felicitous exactly like (84). This shows that we have to prevent *caki-emeni* ‘his mother’ from being a function in its original position. I claim that this is due to an economy principle. In (84), if *caki-emeni* ‘his mother’ is bound

¹¹⁴ Thanks to Danny Fox and Irene Heim for bringing up this question.

by undergoing syntactic reconstruction, why does it bother to do internal binding? An economy principle would not allow this. Similarly in (89), binding is possible to begin with, and thus there is no reason for the phrase *caki-emeni* to leave a complex trace.

The second question is why and how pair-lists are different from natural functions. Given the contrast between (83) and (84), a pair-list seems different from a natural function in that only the latter can motivate type raising of *Mary* from *e* to $\langle e, e \rangle$. If a pair-list were able to do so, there should be no difference between (83) and (84). If a pair-list is a special kind of function that can be defined by extension (see section 3.6.1; see also Engdahl 1986, Chierchia 1991), this is strange. Where does this contrast come from?

One answer to this question can be given by requiring that the implicit argument of the particle *to* needs a linguistic antecedent.¹¹⁵ The implicit argument of the particle *to* does not just share the type with the explicit argument, but it needs to be linguistically present, as well.¹¹⁶ Again, this is a natural move, given the difficulty of accommodation with the additive particle. For example, if *Mary* is of type *e*, the particle requires an overt expression of the same type in the context. Analogously, if *Mary* is of type $\langle e, e \rangle$, an overt expression of the same type should be available in the context. With this in mind, we go back to (82) and (83). In (83), if *Mary* were of type $\langle e, e \rangle$, it would require an antecedent of the same type. But in the preceding context, there is no expression of that type. We might be able to derive a function (defined extensionally) from the preceding list, but the sentence is not of type $\langle e, e \rangle$ but of type $\langle s, t \rangle$ as a proposition. Now

¹¹⁵ I thank Kai von Fintel for suggesting this idea.

¹¹⁶ There are some well-known exceptions to this requirement, as illustrated in (i).

- (i) a. I found out that my neighbor is German, too.
- b. Do you know that your neighbor is German, too.

(ia) can be felicitously uttered in a context where it is not explicitly mentioned that the speaker is German. The same is true of (ib). The speaker does not have to say that the hearer is German. In such a context, of course, both speaker and hearer share the relevant information, namely that the speaker in (ia) and the hearer in (ib) are German. Otherwise, the discourse becomes infelicitous and leads to a question like *Who else is German?* I assume that in these cases, the antecedents are very salient (the speaker or the hearer), and this is why the additive particle is felicitous without an antecedent. Given this, the cases in (i) do not pose a problem for the requirement of the linguistic antecedent. I thank Irene Heim for pointing this out to me.

compare this to the case of (83), where we do have an antecedent of type $\langle e, e \rangle$, namely *caki-emeni* ‘his mother.’ In contrast to the pair-list, the natural function can satisfy the requirement of linguistic antecedents of the same type. For this reason, *Mary* in (85) has no other choice but to be of type *e*, and the pair-list does not satisfy the presupposition. Thus the account of the infelicity of (82) remains the same as given in the previous section.

Another point that follows from this discussion is that the pronominal element within the particle *to* has a stronger requirement than regular pronouns in Korean. In earlier discussion (section 3.6.1.2), I argued that pronouns in Korean are a deep anaphor, and as such they do not require a linguistic antecedent. Here I claim that unlike those pronouns, the first argument of the additive particle requires a linguistic antecedent, and thus it is distinguished from regular pronouns. Lastly, I note that a similar contrast between a pair-list and a natural function is noted in Hebrew.¹¹⁷ Sharvit (1999b) notices that in Hebrew, resumptive pronouns could range over natural functions, but not over pair-lists. Under her assumption that resumptive pronouns require salient discourse antecedents, this means that natural functions can be antecedents of pronouns, whereas pair-lists cannot, in parallel to our case.

Now we turn to the obviation of the reconstruction effect in the presence of a natural function. The contrast between a pair-list and a natural function is shown in (90) and (91).

- (90) Bill-ul Amy-ka, Dave-lul Cathy-ka, Fred-lul Emily-ka coahanta.
 Bill-A Amy-N Dave-A Cathy-N Fred-A Emily-N like
 ‘(Lit.) Bill, Amy likes *t*, Dave, Cathy likes *t*, and Fred, Emily likes *t*.’

#Motun-sonyen-ul₁ [Mary-to t₁ coahanta.]
 every-boy-Acc Mary-also like
 ‘(Lit.) Every boy, Mary-also likes *t*.’

¹¹⁷ I thank Yael Sharvit for bringing this to my attention.

- (91) **Motun-sonyen-ul₁** [**caki-emeni-ka** **t₁** **coahanta.**]
 every-boy-Acc self-mother-Nom like
 ‘(Lit.) Every boy, self’s mother likes *t*.’

Motun-sonyen-ul₁ [**Mary-to** **t₁** **coahanta.**]
 every-boy-Acc Mary-also like
 ‘(Lit.) Every boy, Mary-also likes *t*.’

‘For each boy *x*, *x*’s mother likes *x*, and Mary_F likes *x*, too.’

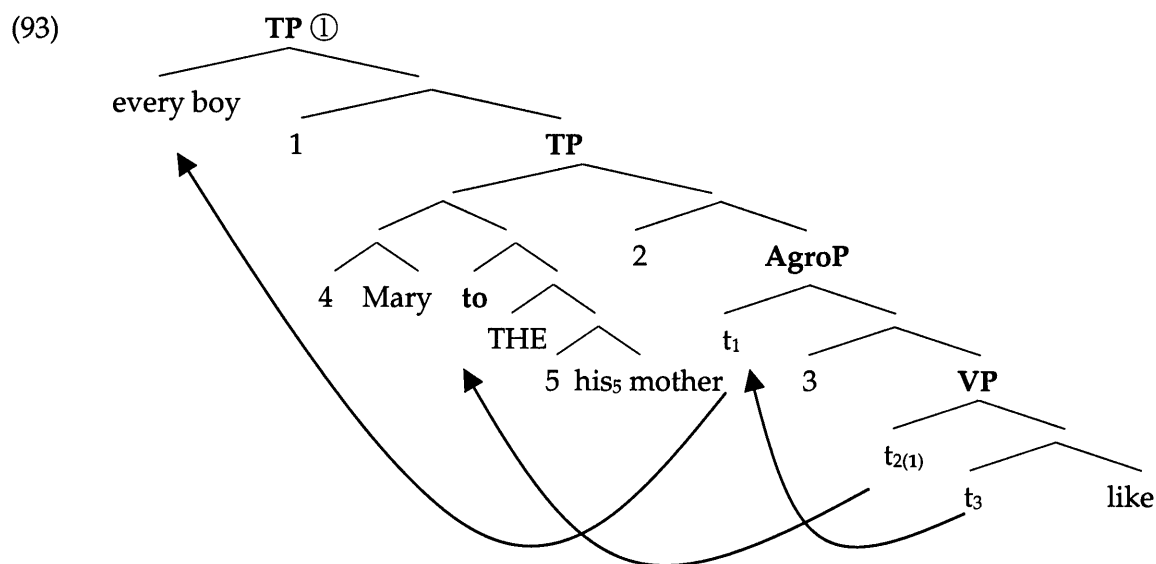
In (90), the scrambled QP appears to obligatorily reconstruct, whereas in (91) it seems to take scope in the surface position. Although the preceding contexts in both (90) and (91) do not provide a salient individual, (91) is a felicitous discourse, unlike (90).

The obviation of the reconstruction effect in (91) receives the same account as that of the anti-reconstruction effect in (84). Thanks to semantic binding, *caki-emeni* ‘his mother’ is interpreted as a function of type $\langle e, e \rangle$. By Type Parallelism, *Mary* in the following sentence undergoes type raising to be a constant function. The discourse in (91) is informally read as follows.

- (92) The mother-function is a function *f* such that for each boy *x*, *f*(*x*) likes *x*.
 The Mary-function is a function *g* such that for each boy *x*, *g*(*x*) in addition to *f*(*x*) likes *x*.

Note here that the pronominal within the *to*-phrase is a free pronoun that is seeking an antecedent of type $\langle e, e \rangle$. Since it is a free pronoun, there is no binding relation between the scrambled QP and this pronoun. The pronoun in the preceding sentence (*caki-emeni* ‘his mother’) is internally bound, not by the scrambled QP. For this reason, there is no WCO violation in (91) although scrambling across the *to*-phrase is an A-bar movement. Contrast this with the case in (90), where the second sentence does not allow the weak reading, which is attributed to a WCO violation. Although we are dealing with the same string of words in (90) and (91), it depends upon the preceding context whether there

will be a WCO violation. The structure of the second sentence of (91) is given in (93) along with the semantic value of the top node in (94). In (93), scrambling of the QP is two-step. It first moves to [Spec, AgroP], which is an A-position, and then undergoes an A-bar scrambling. Note that the argument of the functional trace is exempt from WCO, since it is co-indexed with the c-commanding trace in [Spec, AgroP]. See the appendix for a detailed calculation.



- (94) $\llbracket \textcircled{1} \rrbracket$ is defined if and only if $\lambda y_e. y$'s mother $\neq \lambda y_e. \text{Mary}$ and for each boy x , x 's mother likes x . If defined, $\llbracket \textcircled{1} \rrbracket$ is true iff for each boy x , Mary likes x .

Note also that while comparing (90) and (91), we find the same contrast between a pair-list and a natural function as noted earlier. If a pair-list is interpreted as a function and *Mary* undergoes type raising, there would be no difference between the two discourses. This again shows that pair-lists cannot be referred to by the free pronoun within the *to*-phrase, whereas natural functions can. In (90), there is no functional expression that can be an antecedent of the pronominal within the particle.

To recapitulate, this section showed why the presence of a functional term in the preceding context obviates the reconstruction and anti-reconstruction effects. It turned out that both the *to*-phrase and the QP are interpreted in the scrambled position, but internal binding and type raising makes them look as if they undergo reconstruction.

The data also proved the need of the semantic binding, which makes correct predictions, unlike syntactic binding.

3.6.3. Ordering Restrictions

This section offers an account of the ordering restriction between functional terms and individual terms. When the *to*-phrase containing a functional term is scrambled, an individual term in the preceding context cannot satisfy the presupposition. The data is repeated in (95) and (96) for convenience.

- (95) **Mary-lul₁** [motun-sonyen-i t₁ coahanta.]
 Mary-Acc every-boy-Nom like
 ‘(Lit.) Mary, every boy likes *t*.’

#**Caki-emeni-to₁** [motun-sonyen-i t₁ coahanta.]
 self-mother-also every-boy-Nom like
 ‘(Lit.) Self’s-mother-also, every boy likes *t*.’

‘For each boy *x*, *x* likes Mary, and *x* likes *x*’s mother_F, too.’

- (96) **Motun-sonyen-ul₁** [**Mary-ka** t₁ coahanta.]
 every-boy-Acc Mary-Nom like
 ‘(Lit.) Every boy, Mary likes *t*.’

#**Motun-sonyen-ul₁** [**caki-emeni-to** t₁ coahanta.]
 every-boy-Acc self-mother-also like
 ‘(Lit.) Every boy, self’s-mother-also likes *t*.’

‘For each boy *x*, Mary likes *x*, and *x*’s mother_F likes *x*, too.’

The cases in (95) and (96) contrast with those in (84) and (91) in the previous section, repeated below as (97) and (98). Here a functional term satisfies the presupposition of a *to*-phrase that contains an individual term, which undergoes type raising.

- (97) **Caki-emeni-lul₁** [**motun-sonyen-i** *t*₁ coahanta.]
self-mother-Acc every-boy-Nom like
‘(Lit.) Self’s mother, every boy likes *t*.’

Mary-to₁ [**motun-sonyen-i** *t*₁ coahanta.]
Mary-also every-boy-Nom like
‘(Lit.) Mary-also, every boy likes *t*.’

‘For each boy *x*, *x* likes his mother, and *x* likes Mary_F, too.’

- (98) **Motun-sonyen-ul₁** [**caki-emeni-ka** *t*₁ coahanta.]
every-boy-Acc self-mother-Nom like
‘(Lit.) Every boy, self’s mother likes *t*.’

Motun-sonyen-ul₁ [**Mary-to** *t*₁ coahanta.]
every-boy-Acc Mary-also like
‘(Lit.) Every boy, Mary-also likes *t*.’

‘For each boy *x*, *x*’s mother likes *x*, and Mary_F likes *x*, too.’

The contrast between the two cases illustrates how type raising is constrained by an economy principle. Given the principle that there is no type raising without a motivation (see section 3.5.3.2), the infelicity of (95) and (96) straightforwardly follows. In the first sentence of (95) and (96), *Mary* is interpreted as an individual of type *e*. At this point, there is no motivation for type raising, and thus no type raising takes place. Then the second sentence follows, where the *to*-phrase contains a functional term, namely *caki-*

emeni 'his mother.' In both (95) and (96), the functional interpretation is the only choice available for the phrase. In (95), the *to*-phrase does not reconstruct for economy reasons, thus *caki-emeni* 'his mother' within the *to*-phrase cannot be interpreted as a bound variable. In (96), scrambling across the *to*-phrase is an A-bar movement. If *caki* 'his' is interpreted as a bound variable, it would incur a WCO violation. It must be a functional term, which is internally bound. Now see that the first and the second arguments of the particle have different types. The former is of type *e*, and the latter is of type $\langle e, e \rangle$, and there is no way to adjust different types. The failure to satisfy Type Parallelism explains the infelicity of the discourse. In order to fix the infelicity, the individual term in the first sentences need to be replaced by a functional term:

- (99) **Caki-apeci-lul₁** [motun-sonyen-i t₁ coahanta.]
 self-father-Acc every-boy-Nom like
 '(Lit.) Self's father, every boy likes *t*.'

Caki-emeni-to₁ [motun-sonyen-i t₁ coahanta.]
 self-mother-also every-boy-Nom like
 '(Lit.) Self's-mother-also, every boy likes *t*.'

'For each boy *x*, *x* likes *x*'s father, and *x* likes *x*'s mother_F, too.'

- (100) **Motun-sonyen-ul₁** [**caki-apeci-ka** t₁ coahanta.]
 every-boy-Acc self-father-Nom like
 '(Lit.) Every boy, self's father likes *t*.'

Motun-sonyen-ul₁ [**caki-emeni-to** t₁ coahanta.]
 every-boy-Acc self-mother-also like
 '(Lit.) Every boy, self's-mother-also likes *t*.'

'For each boy *x*, *x*'s father likes *x*, and *x*'s mother_F likes *x*, too.'

All the occurrences of *caki-emeni* ‘his mother’ and *caki-apeci* ‘his father’ in the above are instances of a function. There is no type mismatch, and the discourses are felicitous.

Related to the ambiguity between an individual and a function, I note that some expressions can undergo type raising even without a motivation.¹¹⁸ One such example would be nouns like *The President*. In the following discourse, an individual term precedes a function, but the discourse seems felicitous, even though it may not be as good as (99) and (100).

- (101) **Taythonglyeng-ul₁** [motun-sonyen-i t₁ conkyenghanta.]
 President-Acc every-boy-Nom respect
 ‘(Lit.) The President (of his country), every boy respects *t*.’

Caki-emeni-to₁ [motun-sonyen-i t₁ conkyenghanta.]
 self-mother-also every-boy-Nom respect
 ‘(Lit.) Self’s-mother-also, every boy respects *t*.’

‘For each boy *x*, *x* respects the President, and *x* respects *x*’s mother_F, too.’

I assume that this is not a real violation of the economy principle on type raising. It is possible that unlike other individual terms, these expressions are really ambiguous between type *e* and type $\langle e, e \rangle$. Or they are inherently relational/functional, and thus contain an implicit argument.

Finally, we turn to an interesting fact about the ordering restriction. Surprisingly, there is no ordering restriction of the same kind in sentences with a base order. The following discourse is felicitous, although an individual term precedes a functional term.

¹¹⁸ I thank Sabine Iatridou and Shigeru Miyagawa for bringing this kind of data to my attention.

(102) Motun-sonyen-i Mary-lul coahanta.
 every-boy-Nom Mary-Acc like
 ‘Every boy likes Mary.’

Motun-sonyen-i caki-emeni-to coahanta.
 every-boy-Nom self-mother-also like
 ‘Every boy likes his mother, too.’

‘For each boy x , x likes Mary, and x likes x ’s mother_F, too.’

As in the previous cases, *Mary* in the first sentence has no reason to be a function. If *caki-emeni* ‘his mother’ in the second is a function of type $\langle e, e \rangle$, this discourse should incur a violation of Type Parallelism, and thus be infelicitous as (95) and (96). Contrary to this expectation, this discourse is perfect, which shows that *caki-emeni* ‘his mother’ in the second sentence is not a functional term. This means that the phrase *caki-emeni* ‘his mother’ does not have to be a function. In fact, it cannot be a function in its original position. Recall the claim made in the previous section, which says that if the bound variable is *in situ*, semantic binding is not an option. The ordering restriction confirms the same point. In the second sentence of (102), if *caki* ‘his’ is interpreted as a bound variable, *Mary* in the first sentence can be an antecedent of a free pronoun within the *to*-phrase. Type Parallelism is satisfied, since both are of type e .

In closing the section, I would like to point out that the ordering restriction provides another supporting argument for the anaphoric view of the additive particle and semantic binding. Note first that under the existential view, the ordering restriction would be an arbitrary distinction. Why is it that a function can satisfy the presupposition that requires an individual (e.g. *there is someone other than Mary*), while an individual cannot satisfy the presupposition that requires a function (e.g. *there is some function other than the mother-function*). Thus the contrast between the discourses in (95-96) and those in (97-98) would remain as a puzzle. Type Parallelism, which is crucial in accounting for the ordering restriction, is motivated by the anaphoric view, but not by the existential view.

Next, the syntactic binding wrongly predicts that the discourse in (95) would be felicitous. Suppose that in (95) *caki-emeni* ‘his mother’ undergoes reconstruction in violation of Reconstruction Economy. Under that option, the phrase contains a bound variable, and as such it is an expression of type e. Since it has the same type as *Mary* in the preceding context, Type Parallelism is satisfied. There is nothing wrong with this discourse. Specifically, the syntactic binding predicts that there will be no difference between (95) and (102). The first sentences of (95) and (102) are the same proposition, because it does not matter whether *Mary* is interpreted in the scrambled position or in the trace position. If syntactic binding takes place, the second sentences are the same, as well, at LF. This shows that in order to account for contrast due to scrambling with respect to the ordering restriction, semantic binding should be preferred over syntactic binding.

3.6.4. Alternatives?

The previous sections covered all the data presented in section 3.4. This final subsection considers a few alternative analyses, and rejects them.

One alternative analysis that ‘almost’ works is an account based on some kind of scope parallelism. Fox (2000) proposes a constraint called Parallelism, which ensures that two sentences involved in ellipsis have the same representations at LF. Specifically, the two sentences have identical scope relations, as exemplified in (103).

- (103) a. A boy admires every teacher. $(\exists > \forall) (\forall > \exists)$
 b. A boy admires every teacher. Mary does, too. $(\exists > \forall) (*\forall > \exists)$

As indicated, the sentence in (103a) is ambiguous; but in the ellipsis environment given in (103b), the ambiguity disappears. Fox argues that Parallelism, combined with his Scope Economy, accounts for this contrast. The account is as follows. The elided sentence of (103b) has identical meanings under surface and inverse scope, therefore Scope Economy does not license QR of *every teacher* across *Mary*. Since inverse scope is

not allowed in the elided sentence, Parallelism blocks inverse scope in the antecedent sentence as well. Another proposal made in Asher, Hardt, and Busquets (2001) argues that a parallelism constraint needs to be defined at the level of discourse. Their proposal is made in a different framework from the one that this work is adopting (Segmented Discourse Representation Theory), but the gist of the proposal can be maintained within different frameworks.

Now on the basis of these proposals, one might argue for Scope Parallelism between the two sentences one of which contains the particle *to*. In combination with some economy principle (e.g. no reconstruction without a motivation), this alternative analysis seems to account for quite a few cases.

- (104) **Caki-emeni-lul₁** [**motun-sonyen-i** *t*₁ **coahanta.**]
self-mother-Acc every-boy-Nom like
‘(Lit.) Self’s mother, every boy likes *t*.’

Mary-to₁ [**motun-sonyen-i** *t*₁ **coahanta.**]
Mary-also every-boy-Nom like
‘(Lit.) Mary-also, every boy likes *t*.’

‘For each boy *x*, *x* likes his mother, and *x* likes Mary_F, too.’

- (105) **Motun-sonyen-ul₁** [**caki-emeni-ka** *t*₁ **coahanta.**]
every-boy-Acc self-mother-Nom like
‘(Lit.) Every boy, self’s mother likes *t*.’

Motun-sonyen-ul₁ [**Mary-to** *t*₁ **coahanta.**]
every-boy-Acc Mary-also like
‘(Lit.) Every boy, Mary-also likes *t*.’

‘For each boy *x*, *x*’s mother likes *x*, and Mary_F likes *x*, too.’

The above cases are explained in the following manner. First, in the first sentence of (104), the scrambled phrase undergoes reconstruction for variable binding (suppose that this account does not adopt semantic binding). This reconstruction is allowed since it has a motivation, namely variable binding. In order to satisfy the parallelism constraint, the *to*-phrase in the second sentence undergoes reconstruction, too. If reconstructed, the subject QP takes scope over the *to*-phrase, which accounts for the obviation of the anti-reconstruction effect. Similar explanation can be made for (105). The scrambled QP in the first sentence takes scope in the surface position so that the variable can be bound. Then, Scope Parallelism requires that the scrambled QP in the second sentence also stay in the surface position. This accounts for the absence of the reconstruction effect in (105).¹¹⁹

This analysis, however, runs into a problem in other cases, one of which is the following.

- (106) Motun-sonyen-ul₁ [Mary-ka t₁ coahanta.]
 every-boy-Acc Mary-Nom like
 ‘(Lit.) Every boy, Mary likes *t*.’

#Motun-sonyen-ul₁ [caki-emeni-to t₁ coahanta.]
 every-boy-Acc self-mother-also like
 ‘(Lit.) Every boy, self’s-mother-also likes *t*.’

‘For each boy *x*, Mary likes *x*, and *x*’s mother_F likes *x*, too.’

In the first sentence of (106), the scope relation is the same irrespective of reconstruction, thus Scope Economy does not allow reconstruction of the scrambled QP. In the second sentence, the scrambled QP does not undergo reconstruction either, since it can bind the

¹¹⁹ Note that the similarity between this alternative and the parallelism account of the scope facts is only apparent, given the different directionality. In the current case, the first sentence determines the scope relation of the following sentence, whereas in the ellipsis case, the second sentence affects the interpretation of the first sentence.

variable in the scrambled position (recall that this will be a WCO violation under the proposed account). Then, the parallelism constraint is satisfied, and the discourse is predicted to be good, contrary to fact. This shows that the account based on scope parallelism cannot cover all the data.

Another possibility is to assume different scrambling positions, namely A and A-bar, which are associated with non-reconstruction and reconstruction respectively. If a scrambled phrase occupies an A-position, it does not undergo reconstruction, which would account for the anti-reconstruction effect. If a scrambled phrase occupies an A-bar position, it does undergo reconstruction, which would account for the reconstruction effect. This account is problematic in two ways. First, A and A-bar distinction does not always match with non-reconstruction and reconstruction. Furthermore, reconstruction effects seem to be found with all types of movement (Sportiche 2003, among others). Second, as mentioned many times, the reconstruction and the anti-reconstruction effects are not categorical. Functional terms in the preceding context obviate these effects. If a position is always associated with reconstruction, there is no way to account for the case in which some phrase in that position takes surface scope.

The last alternative to consider is the use of the particle *to* as a discourse particle (see footnote 86). When it functions as a discourse particle, it takes a sentential scope, which might be able to account for its scope pattern. For example, the following sentence is hard to understand under any view of the anaphoric particle.

- (107) Mary-ka John-ul coahanta. John-to Mary-lul coahanta.
 Mary-Nom John-Acc like John-also Mary-Acc like
 ‘Mary likes John, and John likes Mary, too.’

In the second sentence, the additive particle is attached to the subject position, and triggers a presupposition that there is someone *x* other than John who likes Mary. Although the preceding sentence does not provide any individual who likes Mary, the discourse is absolutely felicitous. It seems that the property of *to* as a discourse particle accounts for the felicity of this discourse. The particle in the second sentence is similar to

some kind of conjunction, and the second sentence amounts to 'It is also the case that John likes Mary.'

Although the particle does function as a discourse particle in some cases, this hypothesis does not work for the facts we are looking at. Consider the following sentence, which exhibits the anti-reconstruction effect.

- (108) Mary-*to*₁ [motun-sonyen-i t₁ coahanta.]
 Mary-also every-boy-Nom like
 '(Lit.) Mary-also, every boy likes *t*.'
 (i) *For each boy *x*, there is someone other than Mary who *x* likes. (**every* > *also*)
 (ii) There is someone other than Mary who every boy likes. (*also* > *every*)

The reading available under the discourse particle hypothesis would be something like 'It is also the case that every boy likes Mary.' If the preceding context contains some related text, this sentence should be felicitous in that context, as in (107). This, however, is not the case. As mentioned several times by now, this sentence is not felicitous when preceded by a pair-list. This shows that the discourse particle hypothesis makes too strong a prediction. It makes the particle *to* felicitous in virtually all contexts.

3.7 Implications for English

This section touches upon parallel facts in English. Although we cannot test the same array of facts due to the lack of scrambling in English, basic cases exhibit the same pattern. Look at the following sentences.

- (109) a. Everyone likes Mary_F, too.
 b. Mary_F also likes everyone.

Remember that additive particles in English do not form a constituent with the focused element, and further that *too* and *also* have different distributional properties. Despite

these differences, we get the same pattern in terms of semantics. The sentence in (109a) allows both weak and strong reading, and thus can be felicitous in two contexts. Either there is someone other than Mary whom everyone likes (strong reading), or each boy loves different individuals although they all love Mary (weak reading). For example, it is felicitous to say ‘Everyone likes his mother, and everyone likes Mary_F, too.’ By contrast, the one in (109b) does not allow the weak reading. That is, co-variation is not possible, and it always requires there to be someone other than Mary who likes everyone.

Let’s think about how these readings arise in English. It is easy to derive the two readings in (109a). Under the anaphoric view of the additive particle, the strong reading arises when the implicit pronoun is a free pronoun, whereas the weak reading arises when the implicit pronoun is an E-type pronoun that contains a bound variable, as is done for Korean. Now the issue is how to rule out the weak reading in (109b). Here we can turn to either Scope Economy (combined with Strawson-Equivalence) or a WCO violation. Both devices would do the same job, but it seems to be the economy principle that is working here. The object quantifier in (109b) needs to undergo a short QR due to type mismatch, but it cannot undergo a long QR across the additive particle that associates with the subject. The reading due to the long QR is Strawson-Equivalent to the reading that obtains without it. Since economy disallows QR of *everyone* to begin with, the possibility of a WCO violation does not arise. WCO will be valid only when the QR takes place. So we conclude that the facts in English also follow from the proposed analysis.

3.8 Parallels between Particles *To* and *Man*

This section deals with some parallel facts between the two particles *to* and *man*. Although the two particles behave differently with respect to scopal interaction, they do share quite a few syntactic properties.

3.8.1 Base-Generation vs. Movement

It was shown in the previous chapter that the *man*-phrase is generated via two strategies, namely base-generation and movement, which correlate with the absence or presence of case markers. This section shows that the same is true of the *to*-phrase. The bare *to*-phrase at an S-initial position can be generated in its surface position, or have gotten there via some movement.

- (110) a. John- to_1 [motun-salam-i e_1 coahanta.]
 John-also every-person-Nom like
 ‘(Lit.) John-also, everyone likes *e*.’
 ‘There is someone other than John whom everyone likes.’
- b. John-hako- to_1 [motun-salam-i t_1 akswuhayssta.]
 John-with-also every-person-Nom shook_hands
 ‘(Lit.) Also with John, everyone shook hands *t*.’
 ‘There is someone other than John with whom everyone shook hands.’

In (110a), the empty element is marked as *e*, since it can be either a trace of scrambling or a *pro* that is co-indexed with the DP in the *to*-phrase. In the latter case, the *to*-phrase is base-generated in its surface position, more specifically, in the spec of FocP. In (110b), by contrast, the empty element is a trace of scrambling. Under the assumption that PP is generated within VP, the S-initial *to*-phrase in (110b) must have undergone movement to the S-initial position. Note that there is no difference between the two cases in terms of scope relations. In both cases, the *to*-phrase takes scope over the subject QP, and the account given for (110a) is extended to (110b).

Arguments for this distinction between the two strategies come from resumption and island tests, as discussed in the previous chapter for *man* (section 2.8). First, only the base-generation structure allows the empty element to be replaced by an overt pronoun. This means that resumption is possible in (110a), but not in (110b). This is the case, as shown below.

- (111) a. John-*to*₁ [motun-salam-i ku-lul₁ coahanta.]
 John-also every-person-Nom he-Acc like
 ‘(Lit.) John-also, everyone likes him.’
 ‘There is someone other than John whom everyone likes.’
- b. *John-hako-*to*₁ [motun-salam-i ku-hako₁ akswuhayssta.]
 John-with-also every-person-Nom he-with shook_hands
 ‘(Lit.) Also with John, everyone shook hands with him.’

Second, the bare *to*-phrase in the S-initial position is not subject to island constraints. The sentences in (112a) and (112b) illustrate Complex NP and Adjunct Islands respectively, where the *to*-phrase associates with an empty element within an island.

- (112) a. W&P-*to*₁ Mary-ka [e₁ ilk-un salam-ul] chass-ulswuiss-ess-ta.
 W&P-also Mary-Nom read-Rel person-Acc find-can-Past-Decl
 ‘(Lit.) *War and Peace*-also, Mary could find a person who read *e*.’
 (i) There is a book *x* other than *War and Peace* s.t. Mary could find a person who read *x*.
 (ii) *Mary could find a person who also read *War and Peace*.
- b. John-*to*₁ [Mary-ka e₁ chwuchenhayss-ulttay] motun-salam-i chansenghayssta.
 John-also Mary-N nominated-when every-person-N agreed
 ‘(Lit.) John-also, when Mary nominated *e*, everyone approved of it.’
 (i) There is someone *x* other than John s.t. when Mary nominated *x*, everyone approved of it.
 (ii) When Mary nominated John in addition to someone else, everyone approved of it.

In (112a), the *to*-phrase takes scope over the whole sentence, not just over the relative clause. If it takes scope only over the relative clause, it implies a violation of island condition on scrambling. Similarly, in (112b), the S-initial *to*-phrase can take scope over the whole clause, which again confirms that the bare *to*-phrase is not subject to island constraints. This sentence is ambiguous, as indicated, since the *to*-phrase can undergo scrambling within the adjunct clause.

The non-sensitivity to islands disappears if the *to*-phrase contains a postposition. This is expected since the structure is generated via movement, namely scrambling.

- (113) a. Mary-ka [John-i Sumi-ekey-to malhaycwu-n pimil]-ul alkoissta.
 Mary-Nom John-N Sumi-to-also tell-Rel secret-Acc know
 'Mary knows the secret that John told also to Sumi.'
- b. *Sumi-ekey-to₁ Mary-ka [John-i t₁ malhaycwun-n pimil]-ul alkoissta.
 Sumi-to-also Mary-N John-Nom tell-Rel secret-Acc know
 '(Lit.) Also to Sumi, Mary knows the secret that John told *t*.'
- (114) a. [Mary-ka John-hako-to akswuhayss-ulttay] motun-salam-i nolassta.
 Mary-N John-with-also shook_hands-when every-person-N was_surprised
 'When Mary shook hands with John_F, too, everyone was surprised.'
- b. John-hako-to₁ [Mary-ka t₁ akswuhayss-ulttay] motun-salam-i nolassta.
 John-with-also Mary-N shook_hands-when every-person-N was_surprised.
 '(Lit.) Also with John, when Mary shook hands *t*, everyone was surprised.'
- (i) When Mary shook hands with John_F, too, everyone was surprised.
- (ii) *There is someone *x* other than John s.t. everyone was surprised when Mary shook hands with *x*.

The data confirms that if the *to*-phrase contains a postposition, it becomes sensitive to island constraints. In (113b), the sentence becomes ungrammatical, since the *to*-phrase has scrambled out of a complex NP island. In (114b), the only reading available is the one where the *to*-phrase undergoes scrambling within the adjunct clause. It cannot take scope over the whole clause, in sharp contrast to the bare *to*-phrase. The data in this section suggests again that the presence or absence of morphological marking can be a window onto the structure of sentences.

3.8.2 Binding and the *To*-Phrase

This section addresses how the *to*-phrase behaves as an antecedent of anaphors. We find that the same pattern attested in the *man*-phrase (section 2.9.3) holds of the *to*-phrase as well; namely, that scrambling of the *to*-phrase does not create new binding possibilities.

- (115) a. ***Cakicasin-i** **John-to** pinanhayssta.
 self-Nom John-also criticized
 ‘(Lit.) Self criticized John-also.’
 ‘(Intended) John criticized himself as well as someone else.’
- b. **John-to₁** [**cakicasin-i** **e₁** pinanhayssta.]
 John-also self-Nom criticized
 ‘(Lit.) John-also, self criticized *e*.’
 (i) John criticized himself, and there is someone other than John who criticized himself.
 (ii) *John criticized himself as well as someone else.
- c. ***John-ekey-to₁** [**cakicasin-i** **t₁** malyhayssta.]
 John-to-also self-Nom talked
 ‘(Lit.) Also to John, self talked to *t*.’
 (i) *John talked to himself as well as to someone else.
 (ii) *John talked to himself, and there is someone other than John who talked to himself.

In (115a), the anaphor in the subject position is not bound. In (115b), binding becomes possible, but by hypothesis only under the reading where the *to*-phrase is base-generated in its surface position. The sentence under the second reading, in which the *to*-phrase has undergone scrambling, is not grammatical. The same is true of (115c), where the *to*-phrase containing a postposition cannot bind the anaphor in the subject position.

The two readings of (115c) are provided based on the two possible positions of the *to*-phrase (trace position and the surface position).¹²⁰

The account provided for the binding property of the *man*-phrase is easily extended to the case of the *to*-phrase. The *to*-phrase is an A-bar item, and as such it cannot bind an anaphor. This explains the ungrammaticality of (115c) and the lack of the second reading in (115b). As for the apparent binding relation in (115b) under its first reading, I argue that the empty element (*pro*) undergoes scrambling to an A-position where it can bind the anaphor. This option is available only when the *to*-phrase is base-generated, but not for the PP case in (115c) where the empty element is a trace. Finally, the ungrammaticality of (115a) is simply due to the absence of an antecedent.

3.9 Summary

This chapter investigated the scopal behavior of the Korean additive particle *to*. In the course of this investigation, I identified three factors that affect the scope pattern of the *to*-phrase: scrambling, the kind of function in the preceding context, and the nature of the focused phrase, which leads to the ordering restrictions. I showed that the seemingly confusing data is straightforwardly explained by the proposed account. The analysis is composed of three elements, each of which is independently motivated. First, I argued following Kripke (1990) and Heim (1992) among others that the anaphoric approach to the additive particle is superior to the existential approach. One characteristic of the proposal that best reflects the anaphoric view is that the particle takes two arguments that share the same type (Type Parallelism). Secondly, I claimed that syntactic binding is not the only mechanism that accomplishes variable binding. I showed that semantic binding is also available, which is operative when we are dealing with functional dependencies. This implies that the presence of a bound variable in some dislocated position is not direct evidence of syntactic reconstruction. Finally, I proposed two principles of economy that regulate reconstruction and type raising. Both operations are

¹²⁰ If scope and binding always go together, we may not consider the first reading, since the *to*-phrase takes scope only in its surface position, due to Reconstruction Economy. However, given many cases that show asymmetries between the two, we consider both readings.

allowed only when they are motivated. The motivation of reconstruction is a change in truth-conditions. If reconstruction only affects presupposition, it is not licensed. Similarly, type raising is possible when it is motivated by the lexical entry of the additive particle, namely to avoid type-mismatch. I also considered some possible alternatives and rejected them based on their problems, which highlighted the soundness of the current proposal.

Chapter 4

Conclusion

This dissertation investigated the scopal behavior of two focus particles in Korean in comparison to the scopal behavior of quantifier phrases. The discussion has focused on how the focused phrases (*man*-phrases and *to*-phrases) behave in scrambling contexts. We discovered that both of them exhibit more diverse pattern than we expect under the assumption that they are all generalized quantifiers. Before we address implications and open issues, I will summarize the new findings and claims made in this dissertation.

4.1 Summary

Let us start with the exclusive particle *man*. The starting point of chapter 2 was that the scope of a *man*-phrase varies with its morphological marking. If it is marked by a case marker, its scope is fixed to its case position no matter where it appears in the sentence. If it is marked by a postposition, its surface position affects scope relations. Then, it was shown that the apparent reconstruction effect of the case-marked *man*-phrase and the scopal asymmetry between case-marked and postposition-marked *man*-phrases cannot be accounted for under the assumption that the particle *man* is a scope-bearing element, unless we adopt some special stipulations about it. This discussion led to the claim that the particle is not a scope-bearing element, but an agreement morpheme for a null head ONLY, which carries the exhaustive meaning of English *only*. In line with this claim, the order of nominal affixes played a key role in identifying the position of the null head, under the assumption that morphology reflects syntax.

Chapter 3 turned to the additive particle *to*. I first pointed out that the particle *to* is different from the particle *man* in that the additive particle itself does carry the quantificational meaning. Then, I identified a few generalizations regarding the scope of the *to*-phrase; namely, the reconstruction effect of the QP, the anti-reconstruction of the *to*-phrase, the obviation of both reconstruction and anti-reconstruction effects in the

context of a functional expression, and finally an ordering restriction between a referential expression and a functional expression. Each of these generalizations motivated elements of the proposed account; namely, the anaphoric view of the additive particle, semantic binding, and principles of economy. Specifically, the reconstruction effect motivates the anaphoric view of the additive particle; the anti-reconstruction effect motivates Reconstruction Economy; the obviation of both reconstruction and anti-reconstruction effects in the context of a function expression motivates semantic binding; and finally, the ordering restriction and its absence in certain contexts motivates type raising economy.

4.2 Implications and Open Questions

Beyond the empirical findings stated above, the discussions in this work lead to other interesting implications on issues in the syntax-semantics interface. The most prominent one is the relation between morphology and syntax. As mentioned in the summary, the order of nominal affixes played a crucial role in explaining the scope pattern of the *man*-phrase. Such a correlation did not stop there. Both *man*-phrase and *to*-phrase exhibited clear distinctions when they are bare, that is, when they do not carry any additional marking. The presence of morphological marking (whether it is a pure case marker or a postposition) made noticeable differences in their syntactic behavior, specifically with respect to resumption and island tests, as also noticed in previous literature (Saito 1985, Hoji 1987, Fukaya & Hoji 2000). Such contrasts led us to posit two different strategies of generating focused phrases: movement and base-generation. The data and the conclusion drawn from them suggest, then, that morphological marking provides significant information about clausal structure. Although much discussion on this issue has centered on verbal affixes, the findings in this work support the correlation between syntax and morphology in other areas of grammar, namely in the nominal domain.

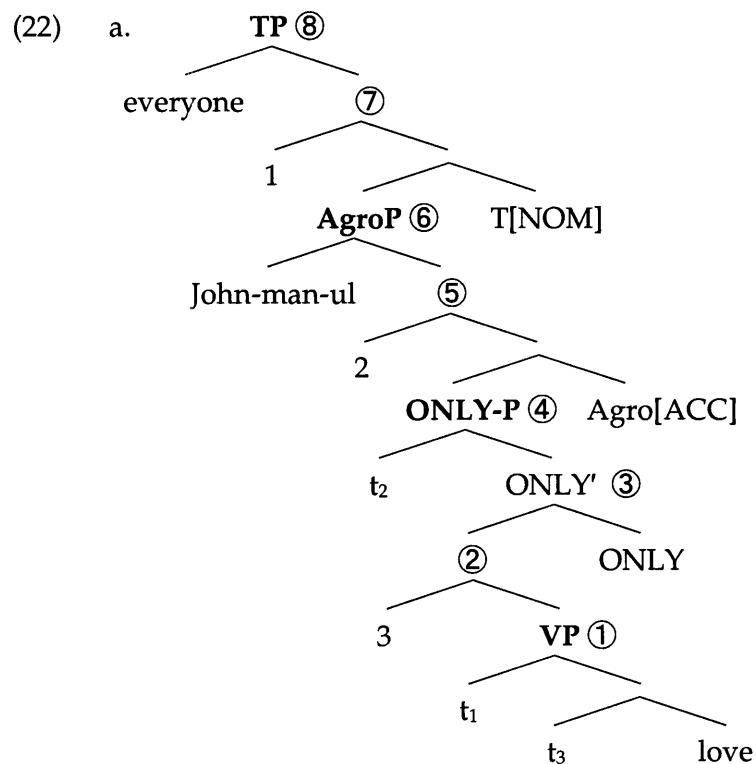
Another important issue is the syntactic representation of focus. One specific claim made in this thesis was that there is no one fixed position for the focus head. It was proposed that at least two positions are available for focus (including the ONLY

head), in accordance with some recent proposals along this line. If this position is on the right track, it brings in new perspectives on issues in the focus domain. Specific questions are concerned with the relation between lexical focus (due to lexical items such as focus particles) and discourse focus (due to discourse structure); for example, how focus is represented in syntax, and whether lexical focus and discourse focus share the same syntax. Another set of questions pertains to other aspects of the particles *man* and *to*. They exhibit ambiguity between quantificational and scalar meanings, and we have focused on the former throughout the work. The issue is how to accommodate the scalar uses to the proposed semantics and formalize them along the lines of proposed analysis for each particle. Related to this, further work is required in comparing focus particles. We have found out that the particles *man* and *to* behave differently in their scope patterns, which is traced back to the different nature of their quantificational force (assertion vs. presupposition). More work is required in comparing focus particles. One step further, the cross-linguistic study of focus sensitive items is an interesting area to look into. Ideally, a study done in one language should be tested in other languages and extended to them. One question in this area is the correlation between focus particles and their occurrence in the domain outside focus. In many languages, the scalar particle (which corresponds to English *even* but shares the same form with the additive particle) is closely related to NPIs and Free Choice Items (Lahiri 1998), and the nature of this correlation is to be further elucidated.

The final issue to consider is the availability of semantic mechanism for variable binding. If semantic binding is available, as argued here, how can we understand the cases that argue for syntactic reconstruction based on Binding Theory (e.g. Romero 1997, Fox 2000)? One might think that if semantic binding is an option in those cases, we cannot derive the correlation between reconstruction and Condition C, for instance. Although I cannot offer an answer to this question at this point, I concede that semantic binding needs to be restricted in some way. Otherwise, it is too powerful. Of course, there are more issues to this that go beyond this brief section, and I leave them as open questions.

Appendix

Chapter 2



[[①]] = x loves y

[[②]] = $\lambda y.x$ loves y

[[③]] = $\lambda z.x$ loves z & $\forall w_e \in \text{ALT}(z): x$ loves w $\rightarrow w = z$

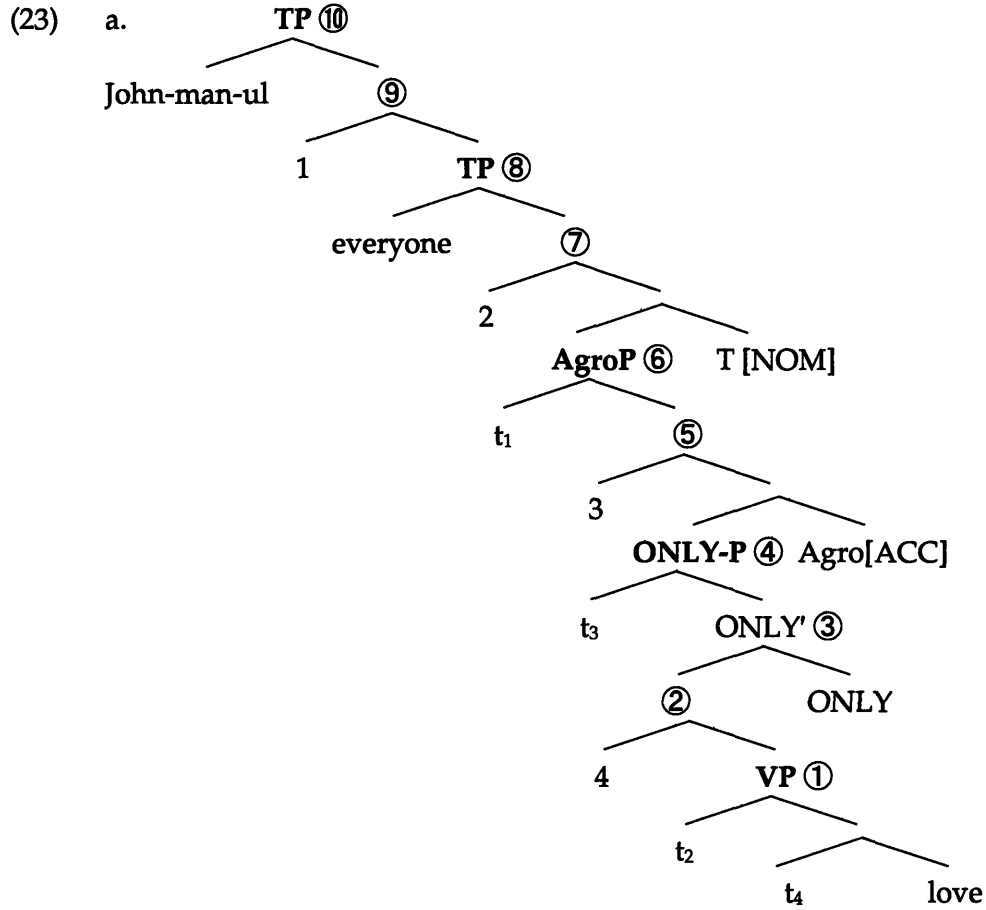
[[④]] = x loves u & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

[[⑤]] = $\lambda u.x$ loves v & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

[[⑥]] = x loves John & $\forall w_e \in \text{ALT}(\text{John}): x$ loves w $\rightarrow w = \text{John}$

[[⑦]] = $\lambda x.x$ loves John & $\forall w_e \in \text{ALT}(\text{John}): x$ loves w $\rightarrow w = \text{John}$

[[⑧]] = For each person x, x loves John & $\forall w_e \in \text{ALT}(\text{John}): x$ loves w $\rightarrow w = \text{John}$



[[1]] = x loves y

[[2]] = $\lambda y.x$ loves y

[[3]] = $\lambda z.x$ loves z & $\forall w_e \in \text{ALT}(z): x$ loves w $\rightarrow w = z$

[[4]] = x loves v & $\forall w_e \in \text{ALT}(v): x$ loves w $\rightarrow w = v$

[[5]] = $\lambda v.x$ loves v & $\forall w_e \in \text{ALT}(v): x$ loves w $\rightarrow w = v$

[[6]] = x loves u & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

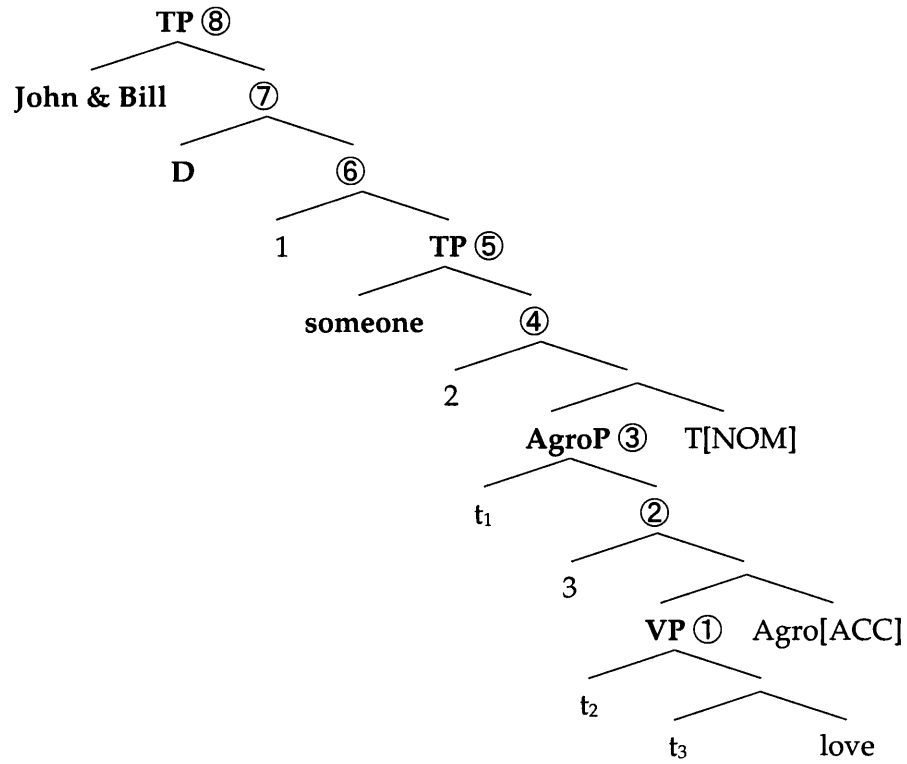
[[7]] = $\lambda x.x$ loves u & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

[[8]] = For each person x, x loves u & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

[[9]] = $\lambda u.$ for each person x, x loves u & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

[[10]] = For each person x, x loves John & $\forall w_e \in \text{ALT}(\text{John}): x$ loves w $\rightarrow w = \text{John}$

(35) a.



[[①]] = y loves z

[[②]] = $\lambda z.y$ loves z

[[③]] = y loves v

[[④]] = $\lambda y.y$ loves v

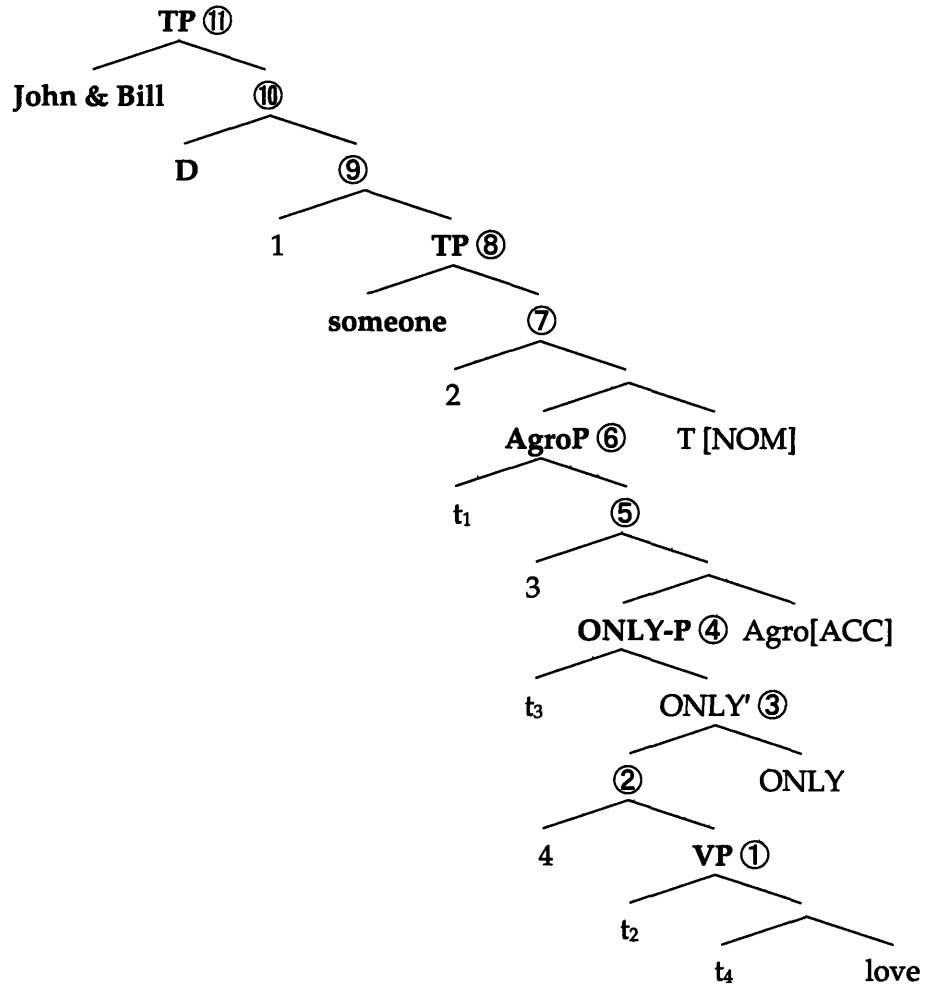
[[⑤]] = There is someone who loves v

[[⑥]] = $\lambda v.$ there is someone who loves v

[[⑦]] = $\lambda X.\forall x \in X$: there is someone who loves x

[[⑧]] = $\forall x \in J \& B$: there is someone who loves x, i.e. there is someone who loves John and there is someone who loves Bill.

(38)



[[1]] = x loves y

[[2]] = $\lambda y.x$ loves y

[[3]] = $\lambda z.x$ loves z & $\forall w_e \in \text{ALT}(z): x$ loves w $\rightarrow w = z$

[[4]] = x loves v & $\forall w_e \in \text{ALT}(v): x$ loves w $\rightarrow w = v$

[[5]] = $\lambda v.x$ loves v & $\forall w_e \in \text{ALT}(v): x$ loves w $\rightarrow w = v$

[[6]] = x loves u & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

[[7]] = $\lambda x.x$ loves u & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

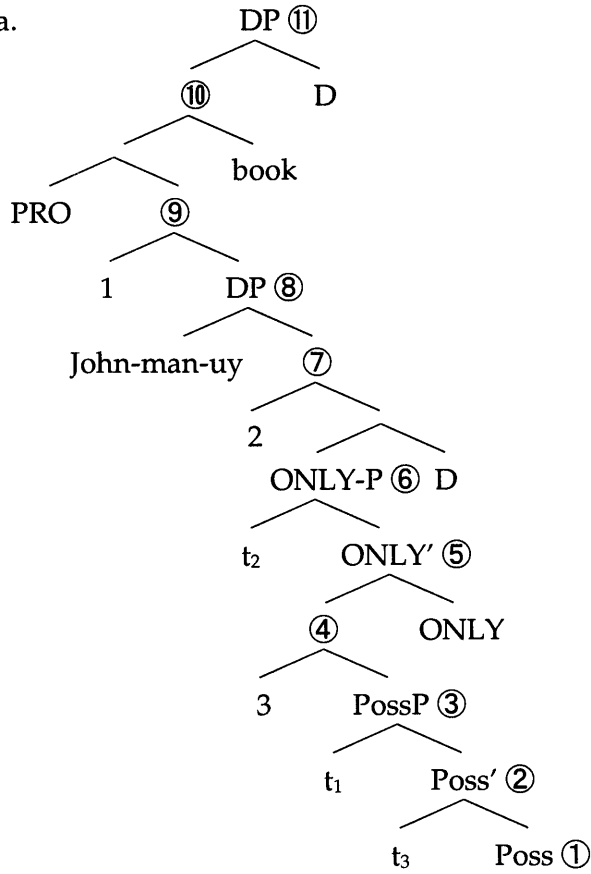
[[8]] = There is someone x such that x loves u & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

[[9]] = $\lambda u.$ there is someone x such that x loves u & $\forall w_e \in \text{ALT}(u): x$ loves w $\rightarrow w = u$

[[10]] = $\lambda Z.\forall z \in Z:$ there is someone x such that x loves z & $\forall w_e \in \text{ALT}(z): x$ loves w $\rightarrow w = z$, i.e. there is someone who loves only z.

[[11]] = $\forall z \in J \& B:$ there is someone who loves only z, i.e. there is someone who loves only John and there is someone who loves only Bill.

(62) a.



[[①]] = $\lambda x.\lambda y.x$ possesses y

[[②]] = $\lambda y.x$ possesses y

[[③]] = x possesses y

[[④]] = $\lambda x.x$ possesses y

[[⑤]] = $\lambda z.z$ possesses y & $\forall w_e \in \text{ALT}(z): w$ possesses $y \rightarrow w = z$

[[⑥]] = v possesses y & $\forall w_e \in \text{ALT}(v): w$ possesses $y \rightarrow w = v$

[[⑦]] = $\lambda v.v$ possesses y & $\forall w_e \in \text{ALT}(v): w$ possesses $y \rightarrow w = v$

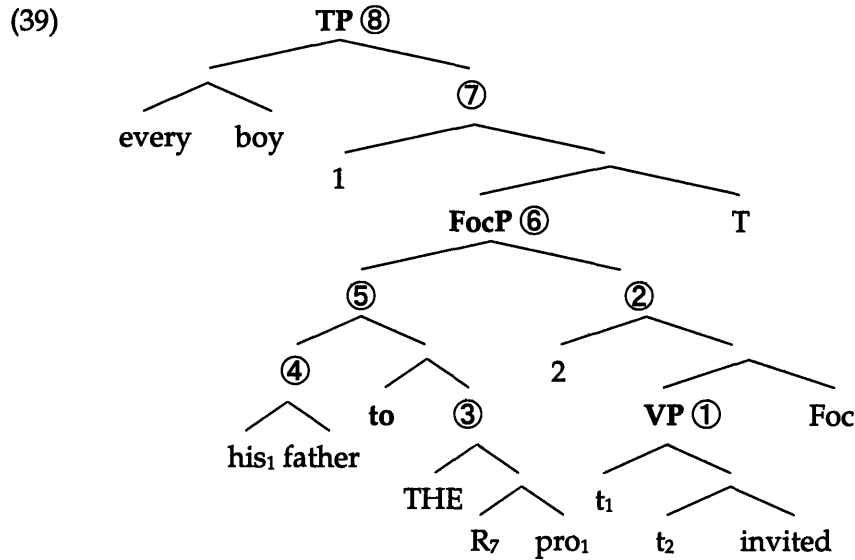
[[⑧]] = John possesses y & $\forall w_e \in \text{ALT}(\text{John}): w$ possesses $y \rightarrow w = \text{John}$

[[⑨]] = $\lambda y.\text{John}$ possesses y & $\forall w_e \in \text{ALT}(\text{John}): w$ possesses $y \rightarrow w = \text{John}$

[[⑩]] = $\lambda y.y$ is a book & John possesses y & $\forall w_e \in \text{ALT}(\text{John}): w$ possesses $y \rightarrow w = \text{John}$

[[⑪]] = The unique y such that y is a book & John possesses y & $\forall w_e \in \text{ALT}(\text{John}): w$ possesses $y \rightarrow w = \text{John}$, i.e. the book that only John possesses.

Chapter 3



[[①]] = x invited y

[[②]] = $\lambda y.x$ invited y

[[③]] = $\iota y[y$ is the mother of x], i.e. x's mother

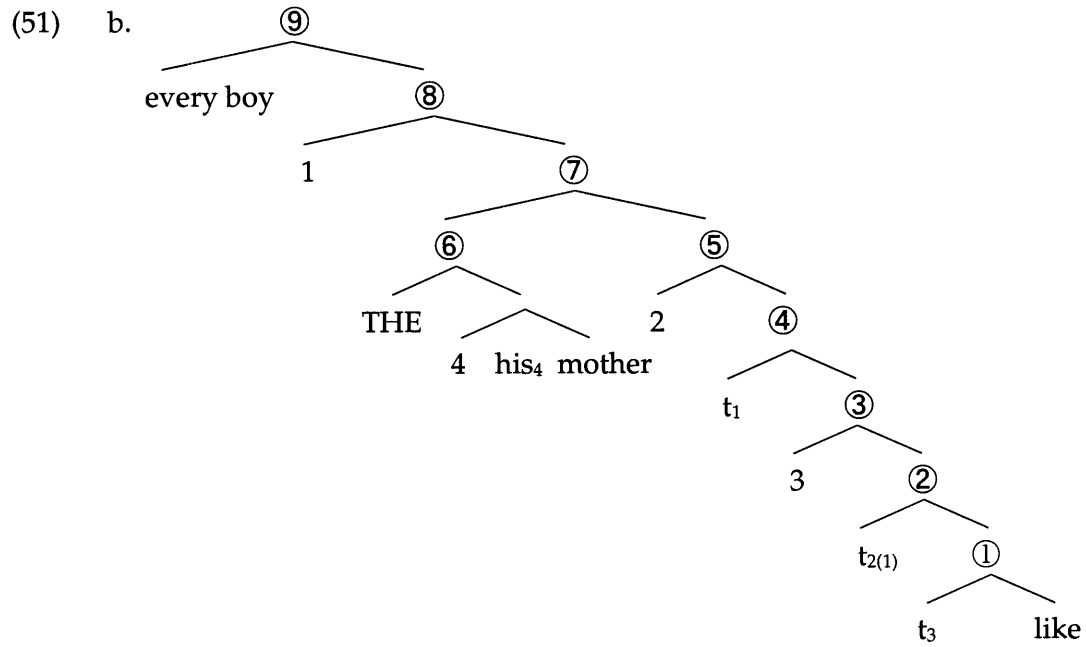
[[④]] = x's father

[[⑤]] = $\lambda P.x$'s mother \neq x's father & $P(x$'s mother) = 1. $P(x$'s father) = 1

[[⑥]] is defined if and only if x's mother \neq x's father & x invited x's mother.
If defined, [[⑥]] = x invited x's father.

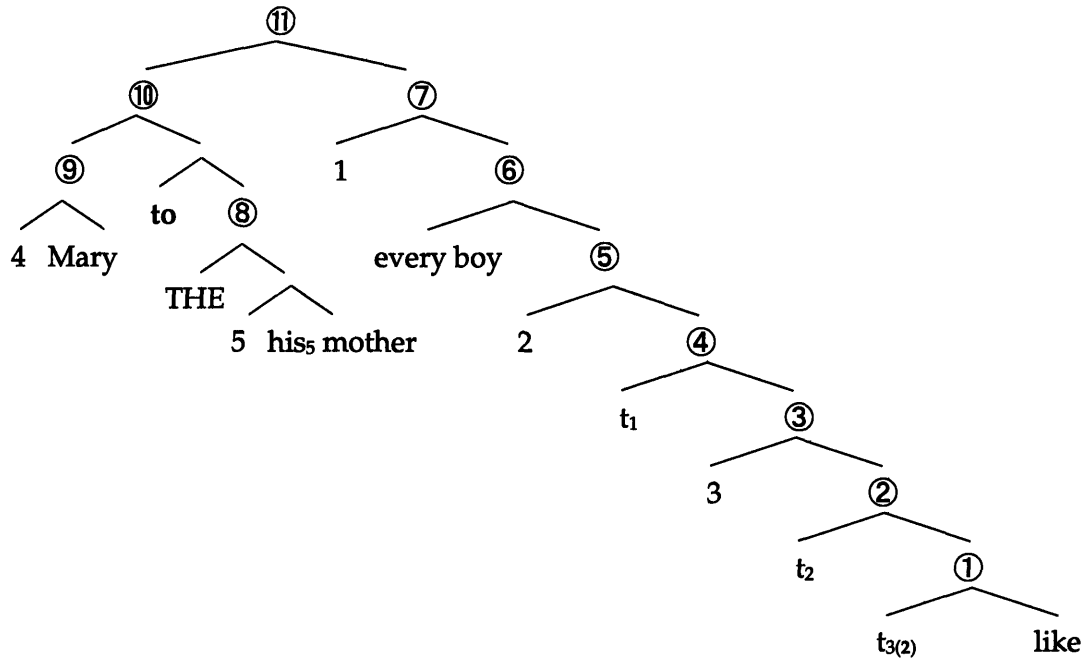
[[⑦]] = $\lambda x: x$'s mother \neq x's father & x invited x's mother. x invited x's father.

[[⑧]] is defined if and only if for each boy x, x's mother \neq x's father & x invited x's mother. If defined, [[⑧]] = for each boy x, x invited x's father.



- $\llbracket ① \rrbracket = \lambda y_e. y \text{ likes } x$
 $\llbracket ② \rrbracket = f(y) \text{ likes } x$
 $\llbracket ③ \rrbracket = \lambda x_e. f(y) \text{ likes } x$
 $\llbracket ④ \rrbracket = f(y) \text{ likes } y$
 $\llbracket ⑤ \rrbracket = \lambda f_{\langle e, e \rangle}. f(y) \text{ likes } y$
 $\llbracket ⑥ \rrbracket = \lambda z_e. \iota w [\text{mother-of}'(w, z)], \text{ i.e. } \lambda z_e. z\text{'s mother}$
 $\llbracket ⑦ \rrbracket = y\text{'s mother likes } y$
 $\llbracket ⑧ \rrbracket = \lambda y_e. y\text{'s mother likes } y$
 $\llbracket ⑨ \rrbracket = \text{For each boy } y, y\text{'s mother likes } y$

(86)



[[1]] = $\lambda y_e. y \text{ likes } f(x)$

[[2]] = $x \text{ likes } f(x)$

[[3]] = $\lambda f. x \text{ likes } f(x)$

[[4]] = $x \text{ likes } g(x)$

[[5]] = $\lambda x_e. x \text{ likes } g(x)$

[[6]] = For each boy x , $x \text{ likes } g(x)$

[[7]] = $\lambda g. \text{for each boy } x, x \text{ likes } g(x)$

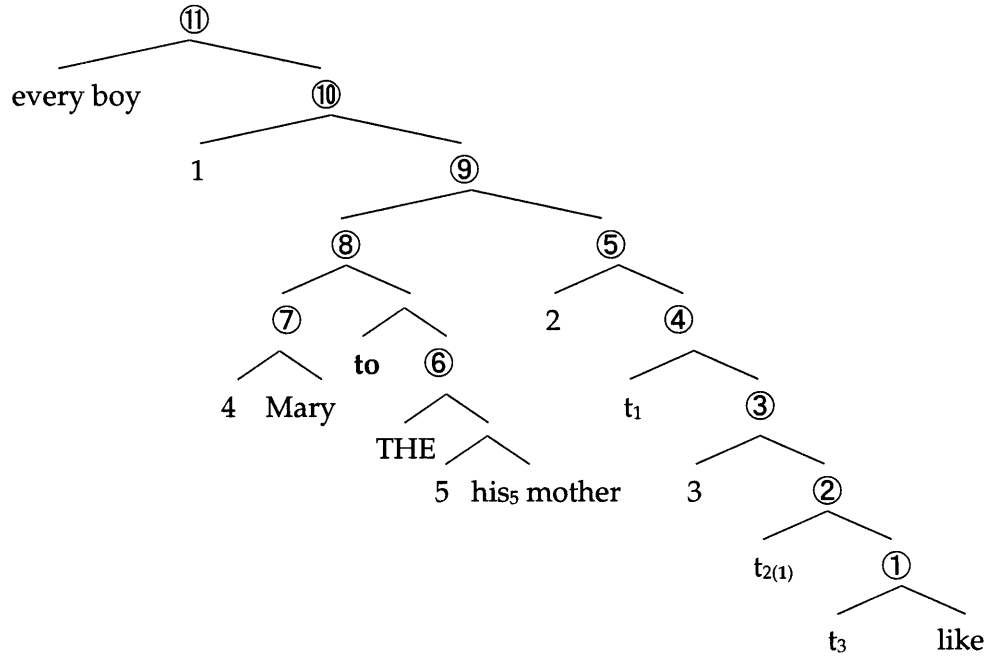
[[8]] = $\lambda z_e. z's \text{ mother}$

[[9]] = $\lambda w_e. \text{Mary}$

[[10]] = $\lambda P_{\langle ee, t \rangle}: \lambda z_e. z's \text{ mother} \neq \lambda w_e. \text{Mary} \ \& \ P(\lambda z_e. z's \text{ mother}) = 1. P(\lambda w_e. \text{Mary}) = 1$

[[11]] is defined if and only if $\lambda z_e. z's \text{ mother} \neq \lambda w_e. \text{Mary}$ & for each boy x , $x \text{ likes } x's \text{ mother}$. If defined, [[11]] = For each boy x , $x \text{ likes Mary}$.

(93)



$\llbracket 1 \rrbracket = \lambda y_e. y \text{ likes } x$

$\llbracket 2 \rrbracket = f(y) \text{ likes } x$

$\llbracket 3 \rrbracket = \lambda x_e. f(y) \text{ likes } x$

$\llbracket 4 \rrbracket = f(y) \text{ likes } y$

$\llbracket 5 \rrbracket = \lambda f_{\langle e, e \rangle}. f(y) \text{ likes } y$

$\llbracket 6 \rrbracket = \lambda z_e. z's \text{ mother}$

$\llbracket 7 \rrbracket = \lambda w_e. \text{Mary}$

$\llbracket 8 \rrbracket = \lambda P_{\langle ee, t \rangle}: \lambda z_e. z's \text{ mother} \neq \lambda w_e. \text{Mary} \ \& \ P(\lambda z_e. z's \text{ mother}) = 1. P(\lambda w_e. \text{Mary}) = 1$

$\llbracket 9 \rrbracket = \text{is defined if and only if } \lambda z_e. z's \text{ mother} \neq \lambda w_e. \text{Mary} \ \& \ y's \text{ mother likes } y.$

If defined, $\llbracket 9 \rrbracket = \text{Mary likes } y.$

$\llbracket 10 \rrbracket = \lambda y_e: \lambda z_e. z's \text{ mother} \neq \lambda w_e. \text{Mary} \ \& \ y's \text{ mother likes } y. \text{Mary likes } y.$

$\llbracket 11 \rrbracket = \text{is defined if and only if } \lambda z_e. z's \text{ mother} \neq \lambda w_e. \text{Mary} \text{ and for each boy } y, y's \text{ mother likes } y. \text{ If defined, } \llbracket 11 \rrbracket = \text{For each boy } y, \text{ Mary likes } y.$

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